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EXEMPLARY
BIOGRAPHY

Morgan Public School.

Class. *II* ... Division.

Garland Bequest

2nd **PRIZE**

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BIOGRAPHY

EXEMPLARY AND INSTRUCTIVE

EDITED BY

W. CHAMBERS, LL.D.

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NOTICE.

To the young, the study of Biography is profitable in two ways. Its least, though most obvious use, is to convey historical information in a pleasing manner. Its more important utility has a reference to the great Educational principle of imitation, which, though inferior to training and exercise, has a decided advantage over precept, the advantages of which it may be said, indeed, to combine with those more properly its own. Under a conviction of these truths, the Editor has prepared the present volume, containing a selection of biographies of those who, while generally exemplary in their private lives, had become the benefactors of their species, by the still more exemplary efforts of their intellect.

The persons referred to are reckoned among those who have conspicuously advanced science and art, and who have distinguished themselves by their humanity, their patriotism, and their successful contendings with depressing circumstances—all being presented in the

manner which was judged most likely to stimulate others to take similar courses, and to manifest similar virtues.

The eminent success of the work during a series of years has encouraged the Editor to issue the present new and revised edition, embracing several lives not formerly given.

EXEMPLARY AND INSTRUCTIVE BIOGRAPHY.

COPERNICUS, GALILEO, AND NEWTON.

ACCORDING to the ancient theory concerning the planetary system, the earth was believed to be the centre of all the bodies moving in space, while the sun and planets revolved around it, at different distances and different rates of speed. The theory did not appear unreasonable, for the sun seemed to rise and set as if going daily round the world; and it required a degree of profound reflection to understand that in reality it is the earth which is constantly turning to produce the effects of day and night, and that to its annual revolution round the sun are due the phenomena of the seasons.

The planetary system, founded on the ancient and incorrect theory, was known as the Ptolemaic system, from having been taught by Ptolemy, an Egyptian philosopher who flourished at the middle of the second century

of the Christian era. The Ptolemaic system had been challenged by Pythagoras, another ancient philosopher, but it long continued to be taught, and was seriously impugned by a poor Polish clergyman, NICOLAS COPERNIC, or COPERNICUS, who died in 1543. By a work which he wrote on the subject, he proved that Pythagoras had been right, when he upheld that the earth and other planets revolve round the sun, instead of being immovable in the midst of these bodies. Strangely enough, the new or Copernican system, as it was called, was not generally accepted as correct, and had to fight its way even among the learned men of the sixteenth century. By one man of inquiry and genius, however, it was embraced as a true explanation of the planetary system. This ingenious inquirer was GALILEO GALILEI, usually known by his Christian name, Galileo, who was born at Pisa in 1564. He first occupied the office of Professor of Mathematics at Pisa; but driven from that city by those who objected to his astronomical theories, he was, in 1592, appointed Professor of Mathematics at Padua. He lectured here with unparalleled success. Scholars from the most distant regions of Europe crowded round him. He delivered his lectures in the Italian language, instead of Latin, which was considered a daring innovation.

During eighteen years which Galileo spent at Padua, he made many discoveries in natural philosophy, which he introduced into his lectures, without regard to their inconsistency with the doctrines previously taught. In 1609, hearing that one Jansen, a Dutchman, had constructed an instrument by which distant objects were made to appear near, Galileo, whose mind was prepared for the discovery, instantly conceived on what principle

it was formed, and, without losing a day, he fashioned a similar instrument with many improvements: such was the origin of the telescope, the most interesting of all instruments connected with science.

Turning his optical tube towards the heavens, Galileo perceived the moon to be a body of rough surface, the sun to be occasionally spotted, and the milky-way to be an assemblage of minute stars. He discovered that the planet Venus waxed and waned like the moon, that Saturn had something like wings by its sides (afterwards found to be a ring), and that Jupiter was surrounded by four satellites. It is impossible to imagine the wonder and delight with which these discoveries must have filled the mind of a man like Galileo, who had perhaps long surmised that all was not as it seemed in the heavens, but despaired of ever being able to penetrate the mystery. In the year 1611, while entering upon his investigations, he was induced, by the invitation of his prince, the Grand-Duke of Tuscany, to return to Pisa, and resume the chair of Mathematics there, with a large salary. It was consequently at that city that he first gave his discoveries to the world. That persecution which had only been suspended by accident in the case of Copernicus, now fell with full weight on the head of the Italian philosopher. Having openly declared, in a work which he published, that his discoveries proved the truth of the Copernican theory, he was denounced by the clergy as a heretic, and obliged, in 1615, to proceed to Rome, and appear before the court of Inquisition, who forced him to promise that he would never more broach such dangerous doctrines. It has been stated, but is not quite certain, that he was on this occasion imprisoned by the Inquisition for five months, and that he would

have suffered still more severely if the Grand-Duke had not interceded for him.

For several years he observed the silence enjoined upon him, but continued to pursue the study of the true theory of the heavens. Panting to make known to the world a complete account of the system of Copernicus, yet dreading the prejudices of his enemies, he fell upon the expedient of writing a work, in which, without giving his own opinion, he introduces three persons in a dialogue, of whom the first defends the Copernican system, the second the Ptolemaic (or that of Aristotle), and the third weighs the reasons of both in such a way, that the subject seems problematical, though it is impossible to mistake the preponderance of arguments in favour of Copernicus.

With this great work, which is still held in reverence, Galileo went to Rome in 1630, in the sixty-sixth year of his age, and, by an extraordinary stretch of favour, he received permission to print it. Scarcely had it appeared at Rome and Florence, when it was attacked by the disciples of Aristotle, and most violently of all by the teacher of philosophy at Pisa. A congregation of cardinals, monks, and mathematicians was appointed to examine his work, which they unhesitatingly condemned as highly dangerous, and summoned him before the tribunal of the Inquisition. This blow fell heavily on the head of Galileo, now an old man, and left defenceless by the death of his friend and patron, Cosmo II. He was compelled to go to Rome in the winter of 1633, and was immediately immured in a cell in one of the prisons of the Inquisition. There he remained for several months, when, being brought before an assembly of his judges, he was condemned to renounce, kneeling before

them, with his hand upon the Gospels, what were called the 'sinful and detestable errors and heresies' which he had maintained. The firmness of Galileo gave way at this critical moment of his life: he pronounced the recantation. But at the moment he rose, indignant at having sworn in violation of his conviction, he exclaimed, stamping his foot: *E pur si muove* (It still moves!). Upon this relapse into heresy, he was sentenced to imprisonment in the Inquisition for life, and every week for three years he was to repeat the seven penitential psalms; his *Dialogues* were also prohibited, and his system utterly condemned. Although Galileo was in this manner sentenced to confinement, it appeared to those who judged him that he would not be able, from his age, to endure such a severe punishment, and they mercifully banished him to a particular spot near Florence.

Here Galileo lived for several years, employing his time in the study of mechanics and other branches of natural philosophy. He was at this time afflicted with a disease in his eyes, one of which was wholly blind, and the other almost useless, when in 1637 he discovered the libration of the moon. Blindness, deafness, want of sleep, and pain in his limbs, united to embitter his declining years; still his mind was active. In this condition he expired in January 1642, in the seventy-eighth year of his age. His remains were deposited in the church of Santa Croce, at Florence, where posterity did justice to his memory, by erecting a splendid monument, in 1737.

The year in which Galileo died, was that in which ISAAC NEWTON was born. This eminent individual, who was destined to establish the truth of the discoveries of his illustrious predecessors, Copernicus and Galileo,

was born on the 25th of December 1642, at Woolsthorpe, in Lincolnshire, where his father cultivated his own moderate paternal property. After receiving the rudiments of education, under the superintendence of his mother, he was sent, at the age of twelve, to the grammar-school at Grantham, where the bias of his early genius was shewn by a skill in mechanical contrivances, which excited no small admiration. Whilst other boys were at play, his leisure hours were employed in forming working-models of mills and machinery; he constructed a water-clock from an old box, which had an index moved by a piece of wood sinking as the drops fell from the bottom, and a regular dial-plate to indicate the hours.

On his removal from school, it was intended that he should follow the profession of a farmer, but his unfitness for the laborious toils of such a life was soon manifested. He was frequently found reading under a tree, when he should have been inspecting cattle, or superintending labourers; and when he was sent to dispose of farming produce at Grantham market, he was occupied in solving mathematical problems, in a garret or hay-loft, whilst the business was transacted by an old servant who had accompanied him to town. These indications of the bias of his disposition were not neglected by his anxious mother; she sent him again for a few months to school, and on the 5th of June 1661, he was admitted a student of Trinity College, Cambridge.

The combination of industry and talents, with an amiable disposition and unassuming manners, naturally attracted the notice of his tutors, and the friendship of his admiring companions; amongst these was Isaac

Barrow, afterwards justly celebrated as a preacher and mathematician. Saunderson's *Logic*, Kepler's *Optics*, and the *Arithmetic of Infinites* by Wallis, were the books first studied by Newton at Cambridge. He read the *Geometry* of Descartes diligently, and looked into the subject of judicial astrology, which then engaged some attention. He read little of Euclid, and is said to have regretted, in a subsequent part of his life, that he had not studied the old mathematicians more deeply.

The attention of Newton, while he was pursuing his studies at Cambridge, was attracted to a branch of natural philosophy hitherto little understood—namely, light. It was the opinion of the celebrated philosopher, Descartes, that light is caused by a certain motion or undulation of a very thin elastic medium, which he supposed pervaded space. Newton overturned this theory. Taking a piece of glass with angular sides, called a prism, he caused the sun to shine upon it through a small hole in the shutter of a darkened apartment. By this experiment he found that the light, in passing through the glass, was so refracted or broken as to exhibit on the wall an image of seven different tints or colours; and after varying his experiments in a most ingenious way, he established the very interesting facts—that light is composed of rays resolvable into particles; that every ray of white light consists of three primary and differently coloured rays (red, yellow, and blue), each of which three is more or less refrangible than the other. This remarkable discovery laid the foundation of the science of Optics.

In 1665, the students of the university of Cambridge were suddenly dispersed by the breaking out of a pestilential disorder in the place. Newton retired for safety

to his paternal estate ; and though he lost for a time the advantages of public libraries and literary conversation, he rendered the years of his retreat a memorable era in his own existence, and in the history of science, by another of his great discoveries, that of the theory of Gravitation, or the tendency of bodies towards the centre of our globe. One day, while sitting in his garden, he happened to see an apple fall from a tree, and immediately began to consider the general laws which must regulate all falling bodies. Resuming the subject afterwards, he found that the same cause which made the apple fall to the ground, retained the moon and planets in their orbits, and regulated, with a simplicity and power truly wonderful, the motions of all the heavenly bodies. In this manner was discovered the principle of gravitation, by a knowledge of which the science of astronomy is rendered comparatively perfect.

On his return to Cambridge in 1667, he was elected Fellow of Trinity College ; and two years afterwards he was appointed Professor of Mathematics, in the place of his friend, Dr Barrow, who resigned. His great discoveries in the science of optics formed for some time the principal subject of his lectures ; and his new theory of light and colours was explained, with a clearness arising from perfect knowledge, to the satisfaction of a crowded and admiring audience. He was elected a Fellow of the Royal Society in 1671, and is reputed to have been compelled to apply for a dispensation from the usual payment of one shilling weekly, which was contributed by each member towards the expenses. He had at this period of his life no income except what he derived from his college and his professorship, the produce of his estate being absorbed in supporting his mother and

her family. His personal wishes were so moderate, that he never regretted the want of money, except when it limited his purchases of books and scientific instruments, and restricted his power of relieving the distresses of others. About the year 1683, he composed his great work, the *Principia, or Mathematical Principles of Natural Philosophy*. In 1688, the memorable year of the Revolution, he was chosen to represent the university in parliament, and the honour thus conferred on him was repeated in 1701. His great merit at last attracted the notice of those who had it in their power to bestow substantial rewards, and he was appointed Warden of the Mint, an office for which his patient and accurate investigations singularly fitted him, and which he held with general approbation till his death. Honours and emoluments at last flowed upon him. In 1705, he received the honour of knighthood from Queen Anne.

Newton's benevolence of disposition led him to perform all the minor duties of social life with great exactness; he assumed no superiority in his conversation; he was candid, cheerful, and affable; his society was therefore much sought, and he submitted to intrusions on his valuable time without a murmur; but by early rising, and by a methodical distribution of his hours, he found leisure to study and compose, and every moment which he could command he passed with a pen in his hand and a book before him. He was generous and charitable. His wonderful faculties were very little impaired, even in extreme old age; and his cheerful disposition, combined with temperance and a constitution naturally sound, preserved him from the usual infirmities of life. He was of middle size, with a figure inclining to plumpness; his eyes were animated, piercing, and intelligent;

the general expression of his countenance was full of life and kindness ; his sight was preserved to the last, and his hair in the decline of his days was white as snow. The severe trial of bodily suffering was reserved for the last stage of his existence, and he supported it with characteristic resignation. On the 20th of March 1727, he died, at the advanced age of eighty-four years.

The character of Newton cannot be delineated and discussed like that of ordinary men. He was endowed with talents of the highest order, but those who are less eminently gifted may study his life with advantage, and derive instruction from every part of his career. With a lofty power of intellect, he demonstrated the motions of the planets, the orbits of the comets, and the cause of the tides of the ocean ; he investigated, with complete success, the properties of light and colours, which no man before had even suspected ; he was the diligent, sagacious, faithful interpreter of nature, while his researches all tended to illustrate the power, wisdom, and goodness of the Creator. Notwithstanding, also, his reach of understanding and knowledge, his modesty was such, that he thought nothing of his own acquirements ; and he left behind him the celebrated saying, ‘ that he appeared to himself as only a child picking up pebbles from the shore, while the great ocean of Truth lay unexplored before him.’

COLUMBUS.

CHRISTOPHER COLON—better known by his Latinised surname, Columbus—was born at Genoa in 1436. He was the eldest son of a poor wool-carder, and in his early years may himself, with his brothers, have worked at the trade of his father. His means of education were of course limited ; but it is known that, at an early age, he had made some progress in the study of mathematics and the Latin language. While a youth, he was very fond of reading all works upon geography, and directed his attention entirely to those branches of learning which would be of use to him in the pursuits to which he had already determined to devote his life. He spent a short time at the college of Padua, where he acquired a knowledge of astronomy and other sciences most necessary to seamen, and particularly useful at a time when so little progress had been made in the art of navigation.

Columbus left the university of Padua when he was about fourteen years of age. Of the events which immediately followed, we have no accurate information. It is only known that he began life in the humble capacity of a sailor-boy, on board one of the Genoese vessels which sailed in the Mediterranean, and from which station he rose by his ability to be commander of a vessel. Subsequently, about the year 1470, he visited Lisbon, and there married a young lady of the name of Palestrello, the daughter of an Italian who had been on

several voyages of discovery under Prince Henry of Portugal. From her Columbus obtained the journals and charts which had been drawn up by her father on his various voyages. He made inquiries about the voyages of the Portuguese along the coast of Guinea, in Africa, and delighted to converse with the sailors who had been there. At this period there was no knowledge of any land farther westward than Madeira, the Canaries, and Cape Verd, with the islands of that name, all lying off the west coast of Africa, and in the track of vessels sailing from Europe to India by the Cape of Good Hope. The Atlantic, within the eastern verge of which these islands lie, was supposed by mariners to be a boundless ocean to the west, or to be limited only by Japan, India, and other portions of the Asiatic continent. By pondering on the figure of the globe, and reasoning from conjecture, Columbus became convinced, that if vessels were to sail westward on the Atlantic, islands would certainly be found in that direction, or that India might be reached much more easily by that route than by sailing thither eastward by the Cape of Good Hope. While his mind was occupied by these reflections, he became naturalised in Portugal, and made several voyages to Guinea and the Canaries, by which he improved himself in navigation. When residing at home, as we are told, he supported his family, including his father and younger brothers, by drawing maps and charts. He also lived very temperately, was plain in his dress, and rigorously observant of his religious duties.

As soon as Columbus had completely formed his opinions regarding the discovery of land in the Atlantic, he considered it necessary to put himself under the patronage of some European power, which should furnish

him with a vessel or vessels, and all other requisite means for making good the discovery. It would be very painful to recite minutely the steps he took on this occasion. He applied first to the Portuguese monarch, John II. by whom he was used exceedingly ill. Mortified by the treatment he had received, he in the year 1484 privately departed from Portugal with his son Diego; his wife having been some time dead. Before leaving Portugal, he sent his brother Bartholomew to make proposals to the king of England, Henry VII.; but Bartholomew was unfortunately captured by pirates on the way to England, which he did not reach till the propositions of Columbus had been accepted by another power.

On leaving Portugal, Columbus betook himself to Spain, with the intention of laying his plans before Ferdinand and Isabella, who at that time governed the united Spanish kingdoms of Castile and Aragon. Columbus arrived at Palos, a small sea-port in Spain, towards the end of the year 1485, and, as it would appear, in a somewhat destitute condition. About half a league from Palos there was a convent of Franciscan friars. Columbus, with his little son, stopped one day at this convent, to ask for some bread and water. The prior of the monastery, Juan Perez de Marchena, was a man of intelligence and learning. Being struck with the appearance and demeanour of Columbus, he immediately entered into conversation with him. It ended in an invitation to the stranger to become for a while a guest at the convent. Juan Perez talked with Columbus of his plans, and became exceedingly interested in them. He sent for a scientific friend, Garcia Fernandez, the physician of Palos, with whom the matter was industriously

examined. All became more and more zealous in their wishes and hopes for putting the project into execution. It happened that Juan Perez was an intimate friend of Fernando de Talavera, the confessor of Queen Isabella. Columbus being furnished with a letter of introduction to Talavera, in which his enterprise was strenuously recommended to the patronage of the crown, left his son at the convent with his friend, and departed for the court of Castile, in the spring of 1486.

On arriving at Cordova, where the court at that time was residing, he found it almost impossible to obtain a hearing. This he at length accomplished; but it was long before he could make a sufficient impression on Ferdinand or his queen to induce them to second his views. They referred his suit to a body of learned professors, who laughed at his project, which they declared to be irreligious and impious.

Tired with waiting on the pleasure of the court of Spain, and receiving a letter of encouragement from the court of France, Columbus departed on a journey to Paris, taking in his way the friendly convent at Palos, where he had left his son under the care of Juan Perez. When his old friend the prior saw Columbus once more at the gate of his monastery, after several years of vain solicitation at court, he was deeply affected. He entreated him by all means to remain in the country. He had been father confessor to the queen, and thought he might still exercise an influence over her mind. He accordingly proceeded to Santa Fé, where the sovereigns were in person superintending the siege of the capital of Granada. Perez obtained a ready access to the queen. He laid before her the propositions of Columbus with freedom and eloquence. Isabella was

moved with the grandeur of the project. The principles upon which it was founded, the advantages that would result from its success, and the glory it would shed upon Spain, were for the first time represented to her in their true colours. She promised her patronage to the undertaking.

It was now only necessary to agree upon the terms. Columbus would listen only to princely conditions. A meaner spirit, after years of unsuccessful toil, poverty, and disappointment, would have been glad to secure the assistance of the sovereigns, on such arrangements as their own liberality might dictate. But Columbus proposed his own rewards and honours, and would consent to no other. He demanded them as if he were already successful, and aware of the extent and importance of his discoveries. The court were eventually obliged to grant that he should be admiral on the ocean, and enjoy all the privileges and honours allowed to the High Admiral of Castile; that he should be governor over all the countries he might discover; and that he should reserve to himself one-tenth of all pearls, precious stones, gold, silver, and articles of merchandise, in whatever manner obtained, within his admiralty. They also allowed that he should appoint judges in all parts of Spain trading to those countries; and that on this voyage, and at all other times, he should contribute an eighth part of the expense, and receive an eighth part of the profits. These articles of agreement were signed by Ferdinand and Isabella, at the city of Santa Fé, on the 17th of April 1492. Three caravels, or very small vessels, little better than decked boats, were procured at Palos, and orders given that they should be manned and provided with all care and diligence. There were

still difficulties before commencing the voyage, which it required all the perseverance of Columbus to overcome. It was almost impossible to prevail upon any seamen to engage in the undertaking. The royal order for the fitting out of the caravels was peremptory; but weeks passed and it still remained unfulfilled. The old sailors who had spent most of their lives upon the water, shrunk from the enterprise with horror. New orders were issued by the court, and officers were appointed to press ships and seamen into the service of Columbus. This measure occasioned a great deal of disputing and confusion, but led to no important result. At length, a rich and adventurous navigator, named Alonzo Pinzon, came forward, and interested himself very strenuously in the expedition. His assistance was effectual. He owned vessels, and had many seamen in his employ, and consequently possessed great influence. He and his brother, Vicente Pinzon, determined to take commands, and sail with Columbus. Their example had a great effect; they persuaded their relations and friends to embark with them, and the vessels were ready for sea within a month after they had thus engaged in their equipment.

We now find Columbus on the eve of his first grand expedition, which was to result in the discovery of the American continent and islands. The simple seaman of Genoa, whom the ignorant derided as a fool, and philosophers neglected as an impostor, after years of poverty and disappointment, had at length obtained the object of his unwearied solicitations, and was going forward with a calm and dignified assurance of success. What unspeakable joy must have filled his heart, as the little caravel in which he sailed was leaving the shores of Spain in the distance, stretching forward into that dim

and unexplored ocean, from whose shadows he was to reveal new dominions for his country, and a new world for Europe !

Columbus and his companions sailed from the bar of Saltes, a small island in front of the town of Huelva, early on the morning of the 3d of August 1492. They directed their course in a south-westerly direction for the Canary Islands. These they reached ; and after spending some time in repairing a damage in one of the vessels, and taking in fresh supplies of wood, water, and meat, set sail from the harbour of Gomera on the 6th of September. They steered their course directly west. In a few days they began to fall in with what Columbus considered signs of land, such as quantities of green weeds, a live crab, flocks of birds, and so forth ; but all these signs of land continually failed. The crews, daily more and more disposed to murmur against the admiral, had by turns to be flattered and threatened with punishment, to keep them from open rebellion. Provisions at length were falling short, and some of the men proposed to throw Columbus into the sea, and give out on their return that he had accidentally fallen overboard.

The first land that Columbus expected to meet was Cipango, which had been placed by geographers at the eastern extremity of India. This was the name given to the island now called Japan, by Marco Polo, a Venetian traveller. The most extravagant accounts of the riches of this country were given by the writers of that age, and the admiral was anxious to proceed directly thither. At sunrise on Sunday the 7th of October, the *Nina*, which had outsailed the other vessels, on account of her swiftness, hoisted a flag at her mast-head, and fired a gun, as a signal of having discovered land. There had been a

reward promised by the king and queen to the man who should first make this discovery, and each of the vessels was striving very eagerly to get ahead, and obtain the promised recompense. As they found nothing of the land the *Nina* had made signals for, the admiral shifted his course, about evening, towards the west-south-west, with a determination to sail two days in that direction. The reason for making this change was an observation which had been made in watching the flight of birds. The Portuguese had discovered most of their islands in this manner, and Columbus noticed that the flocks which passed them all flew from the north to the south-west. He inferred from this that land was situated in that quarter. After sailing a day or two, they found the air as soft as that of Seville in April, and so fragrant that it was delicious to breathe it. The weeds appeared very fresh, and many land-birds were taken. The men, however, had lost all faith in any signs of land. They did not cease to murmur and complain. The admiral encouraged them in the best manner he could, representing the riches they were about to acquire, and adding, that it was to no purpose to complain; for, having come so far, they had nothing to do but to continue, till, by the assistance of Heaven, they should arrive at the Indies.

On the 11th of October, they met with signs of land that could not be mistaken, and all began to regain spirits and confidence. The crew of the *Pinta* saw a cane and a log. They also picked up a stick, which appeared to have been carved with an iron instrument, a small board, and abundance of weeds that had been newly washed from the banks. The crew of the *Nina* saw other similar signs, and found, besides, a branch of

a thorn full of red berries. Convinced by these tokens of the neighbourhood of land, Columbus, after evening prayers, made an address to his crew, reminding them of the mercy of God in bringing them so long a voyage with such fair weather, and encouraging them by signs that were every day plainer and plainer. He repeated the instructions he had given at the Canary Islands, that when they had sailed seven hundred leagues to the westward without discovering land, they should lie by from midnight till daybreak. He told them that, as they had strong hopes of finding land that night, every one should watch in his place ; and besides the thirty crowns a year which the Spanish sovereigns had promised to the first discoverer, he would give him a velvet doublet.

About ten o'clock that evening, while Columbus was keeping an anxious look-out from the top of the cabin, he thought he beheld a light glimmering at a great distance. Fearing that his hopes might deceive him, he called two of his companions to confirm him. One of them came in time to observe it, but the other was too late. It had disappeared. From this they supposed it might be the torch of some fisherman, raised up and then suddenly dropped again. They were all confident of being near land. About two o'clock in the morning, the *Pinta* gave the signal of land, which was first perceived by a sailor named Rodrigo de Triana.

When the day appeared, they perceived before them a large island, quite level, full of green trees and delicious waters, and to all appearance thickly inhabited. Numbers of the people immediately collected, and ran down to the shore. They were very much astonished at the sight of the ships, which they believed to be living creatures. The ships immediately came to anchor.

The admiral went ashore in his boat, well armed, and bearing the royal standard. The other captains each took a banner of the Green Cross, containing the initials of the names of the king and queen on each side, and a crown over each letter. The admiral called upon the two captains, and the rest of the crew who landed, to bear witness that he took possession of that island for his sovereigns. They all gave thanks to God, kneeling upon the shore, shedding tears of joy for the great mercy received. The admiral rose, and called the island San Salvador. It belongs to that group now called the Bahamas.

Many of the natives came down to witness this ceremony. They were very peaceable and quiet people, and the admiral gave them some red caps, glass beads, and a few other trifles of small value, with which they were very much delighted. They imagined that the strangers had descended from heaven, and valued the slightest token they could receive from them as of immense worth. When the admiral and his companions returned to their vessels, the natives followed them in large numbers. Some swam; others went in their canoes, carrying parrots, spun-cotton, javelins, and other articles, to exchange for hawks' bells and strings of beads. They went entirely naked, seeming to be very poor and simple.

In the morning, Columbus sailed along the coast of the island towards the north-west, and in his voyage discovered other islands, to which he gave names. The largest he fell in with was Cuba, which is nearly as large as Great Britain. At Cuba he expected to find a great trade, abundance of gold and spices, large ships, and rich merchants. He inferred that this must be the island of

Cipango, of which Marco Polo had said so many marvellous things. In these conjectures he was mistaken. On the 5th of December he discovered and landed upon another large island, which he called Hispaniola, now named San Domingo or Hayti. Here he planted a fort, which he made the seat of a colony. From this period may be dated the commencement of the misfortunes of Columbus. That great man now lost control over his wicked and rapacious companions, who seemed desirous of plundering the newly discovered islands, and afterwards of sailing home, to be the first to make known the discoveries that had been made. Pinzon, the commander of the *Pinta*, took the lead in these dastardly proceedings, for which he afterwards expressed the deepest regret.

After cruising about for some time, and endeavouring to enter into friendly alliances with native chiefs in the islands, Columbus set sail with his vessels on his return to Spain. His homeward voyage was exceedingly stormy; and after braving the most imminent dangers, he came in sight of land near Lisbon, on the 4th of March 1493. Having paid his respects, in passing, to the Portuguese monarch, he proceeded without loss of time towards the coast of Spain; and on the 15th of March, he entered and anchored in the harbour of Palos. The joy and confusion excited in Palos by the arrival of Columbus may be easily imagined. He was everywhere received with shouts and acclamations, and such honours as were usually paid to sovereigns.

After the first expressions of joy and admiration, Columbus departed for Seville. From this place he sent a message to Barcelona, where the king and queen at that time resided, to lay before them a brief account of his voyage, and to receive from them an indication of

their royal will. His reception at Barcelona was particularly gratifying. He made a sort of triumphal entry, surrounded by knights and nobles, who emulated each other in their efforts to swell his praises. He was received publicly by the sovereigns, in a splendid saloon, seated on the throne, and encircled by a magnificent court. On his entrance, they rose to greet him, and would hardly allow him to kiss their hands, considering it too unworthy a mark of vassalage. Columbus then gave an account of his discoveries, and exhibited the different articles which he had brought home with him. He described the quantity of spices, the promise of gold, the fertility of the soil, the delicious climate, the never-fading verdure of the trees, the brilliant plumage of the birds, in the new regions which his own enterprise had acquired for his sovereigns. He then drew their attention to six natives of the New World, whom he had brought, and who were present, and described their manners and dispositions. He exhibited their dresses and ornaments, their rude utensils, their feeble arms, which corresponded with his description of them, as naked and ignorant barbarians. To this he added, that he had observed no traces of idolatry or superstition among them, and that they all seemed to be convinced of the existence of a Supreme Being. The conclusion of his speech was in those words: 'That God had reserved for the Spanish monarchs not only all the treasures of the New World, but a still greater treasure, of inestimable value, in the infinite number of souls destined to be brought over into the bosom of the Christian church.'

After he had finished his address, the whole assembly fell upon their knees, while an anthem was chanted by the choir of the royal chapel. With songs of praise, the

glory was given to God for the discovery of a New World. Columbus and his adventures were for many days the wonder and delight of the people and the court. The sovereigns admitted the admiral to their audience at all hours, and loaded him with every mark of favour and distinction. Men of the highest rank were proud of the honour of his company.

All matters were soon prepared for the second expedition to the New World. On the dawn of the 25th of September 1493, the Bay of Cadiz was crowded with the departing fleet of Columbus. There were three large ships and fourteen caravels waiting for the signal to sail. All on board were breathing hope and joy. Instead of the gloomy despondency that overshadowed the leaving at Palos, there was now animation and cheerfulness. The whole fleet was under way before the rising of the sun, sailing joyfully, under a serene sky, through the tranquil waters.

During this second voyage, Columbus extended his discoveries, though without reaping any solid advantage to himself. He found the fort which he had planted entirely destroyed, and the men whom he had left slain, their avaricious and quarrelsome disposition having led to their extirpation by the enraged natives. A new colony under better auspices was, however, settled, and the payment of a tribute by the natives enforced. In the meantime, the disaffected and worthless among his companions carried groundless complaints against Columbus to the court of Spain, and he returned to obtain reparation of the injurious imputations. On appearing before his sovereigns, he was soothed by some trifling apologies, and despatched on a third voyage, in May 1498, and in this expedition he landed on the coast of Paria, in South

America. He found the lately discovered islands distracted with the horrors of civil discord. The vices of the settlers he had left had produced misery and despair, and the unfortunate Columbus was loudly accused of being the cause of the universal ruin. His enemies in Spain had likewise the influence to induce the despatch of a commissioner, one Bovadilla, to Hispaniola, to inquire into the truth of the charges against Columbus, and to supersede his administration. The consequence of this harsh procedure was, that Columbus, with his brothers, Diego and Bartholomew, after being treated with the utmost indignity, were sent to Spain in chains.

The rumour was no sooner circulated at Cadiz and Seville that Columbus and his brothers had arrived, loaded with chains, and condemned to death, than it gave rise to a burst of public indignation. The excitement was strong and universal, and messengers were immediately despatched to convey the intelligence to Ferdinand and Isabella. The sovereigns were moved by this exhibition of popular feeling, and were offended that their name and authority should have been used to sanction such dishonourable violence. They gave orders for the immediate liberation of the prisoners, and for their being escorted to Granada with the respect and honour they deserved. They annulled all the processes against them, without examination, and promised an ample punishment for all their wrongs. Columbus was not, however, restored to his command at Hispaniola, nor was it till many months afterwards that he was placed at the head of an expedition to open a new passage to the East Indies. On the 9th of May 1502, he again set sail from Cadiz on a fourth voyage of discovery. During this voyage he touched at some parts of

the South American continent, and also at some of the formerly discovered islands ; but he failed in making any important discoveries, in consequence of the bad state of his vessels, which were old and unfit for sailing. With a squadron reduced to a single vessel, he now returned to Spain, where he heard with regret of the death of his patron, Isabella. This was a sad blow to his expectations of redress and remuneration. Ferdinand was jealous and ungrateful. He was weary of a man who had conferred so much glory on his kingdom, and unwilling to repay him with the honours and privileges his extraordinary services so richly merited. Columbus, therefore, sank into obscurity, and was reduced to such straitened circumstances, that, according to his own account, he had no place to repair to except an inn, and very frequently had not wherewithal to pay his reckoning. Disgusted and mortified by the base conduct of Ferdinand, and exhausted with the hardships which he had suffered, and oppressed with infirmities, Columbus died at Valladolid, on the 20th of May 1506. His life closed with a composure of mind suitable to the magnanimity which distinguished his character, and with sentiments of piety becoming that supreme respect for religion which he manifested in every occurrence of his life.

The discoveries of Columbus laid open a knowledge of what are now termed the West India Islands, and a small portion of the South American continent, which this great navigator, till the day of his death, believed to be a part of Asia or India. About ten years after his decease, the real character of America and its islands became known to European navigators ; and by a casual circumstance, one of these adventurers, *Amerigo*

Vespucci, a Florentine, had the honour of conferring the name *America* upon a division of the globe, which in justice ought to have been called after the unfortunate Columbus.

GUTENBERG—CAXTON.

JOHN GUTENBERG, to whom the honour is due of having invented the art of printing, was born at Mayence, or Mentz, in Germany, in the year 1400. Of the early part of his life, nothing is now known. There is reason to suppose, however, that he possessed a genius for mechanical pursuits, and was not deficient in the elements of literature. Up till the period in which he appeared, printing was unknown. All books were written and circulated on a limited scale in manuscript, and were sold at immensely high prices. The Chinese, from early times, had used carved stamps to impress upon paper instead of writing; the Romans likewise used stamps and seals in order to produce impressions; but the idea of forming individual letters or characters, capable of being arranged in every kind of combination, does not appear to have occurred to any of the ancient nations, and was left to be first thought of by the ingenious Gutenberg, in the early part of the fifteenth century.

Having struck out the ingenious idea of forming letters or types, wherewith to produce any given number of impressions, and upon any subject, he kept the discovery a profound secret, and removed to Strasburg about the year 1424. Unfortunately for Gutenberg, he was poor, and unable, by his own efforts, to render his

discovery practically beneficial. By this means he was led into many difficulties, and in some measure robbed of the merit of his invention. After some troubles and losses on this account, Gutenberg proceeded, in 1445-6, to his native city of Mentz, where he resumed his typographic labours.

Being ambitious of making his extraordinary invention known, and of value to himself, but being at the same time deficient in the means, he opened his mind to a wealthy goldsmith and worker in precious metals, named John Fust or Faust, and prevailed on him to advance large sums of money, in order to make further and more complete trials of the art. Gutenberg being thus associated with Fust, the first regular printing establishment was begun, and the business of printing carried on in a style corresponding to the infancy of the art. After many smaller essays in trying the capabilities of his press and movable types, Gutenberg had the hardihood to attempt an edition of the Bible, which he succeeded in printing complete, between the years 1450 and 1455. This celebrated Bible, which was the first important specimen of the art of printing, and which, judging from what it has led to, we should certainly esteem as the most extraordinary and praiseworthy of human productions, was executed with cut-metal types, on six hundred and thirty-seven leaves; and from a copy still in existence in the Royal Library of Berlin, some of them appear to have been printed on vellum. The work was printed in the Latin language.

The execution of this the first printed Bible, which has justly conferred undying honours on the illustrious Gutenberg, was, most unfortunately, the immediate cause of his ruin. The expenses incident to carrying on

a fatiguing and elaborate process of workmanship for a period of five years, being much more considerable than what were originally contemplated by Fust, he instituted a suit against poor Gutenberg, who, in consequence of the decision against him, was obliged to pay interest, and also a part of the capital that had been advanced. This suit was followed by a dissolution of partnership; and the whole of Gutenberg's apparatus fell into the hands of John Fust, who, from being the ostensible agent in the business of printing, and from the wonder expressed by the vulgar in seeing printed sheets, soon acquired the name of a magician, or one in compact with the devil; and under this character, with the appellation of Dr Faustus, he has for ages enjoyed an evil notoriety.

Besides the above-mentioned Bible, some other specimens of the work of Gutenberg have been discovered to be in existence. One in particular, which is worthy of notice, was found some years ago among a bundle of old papers in the archives of Mayence. It is an almanac for the year 1457, which served as wrapper for a register of accounts that year. This, says Hansard, would most likely be printed towards the close of 1456, and may consequently be deemed the most ancient specimen of typographic printing extant, with a *certain* date. That Gutenberg was a person of refined taste in the execution of his work, is sufficiently obvious. Adopting a very ancient custom, with reference to the written copies of the Scriptures and the missals of the church, he used a large ornamental letter at the commencement of books and chapters, finely embellished, and surrounded with a variety of figures as in a frame. The initial letter of the first psalm thus forms a beautiful

specimen of the art of printing in its early progress. It is richly ornamented with foliage, flowers, a bird, and a greyhound, and is still more beautiful from being printed in a pale-blue colour, while the embellishments are red, and of a transparent appearance. What became of Gutenberg immediately after the unsuccessful termination of his lawsuit with Fust, is not well known. Like the discoverer of the great Western Continent, he seems to have retired almost broken-hearted from the world, and to have spent most of the remainder of his days in obscurity. It is ascertained, however, that in the year 1465 he received an annual pension from the Elector Adolphus, but that he only enjoyed this small compensation for his extraordinary invention during three years, and died in the month of February 1468.

It long formed a subject of contention amongst antiquaries and bibliomaniacs, by what means Gutenberg formed his types, but it is now pretty clearly ascertained that they were at first all individually cut by the hand. The mode of *casting* types in moulds has been very generally, and with apparent truth, assigned to Gutenberg's successor, Schöffer. This individual was an industrious young man of inventive genius, an apprentice with Fust, who took him into partnership immediately after his rupture with Gutenberg, and who is supposed to have been initiated into the mysteries of the art by the latter. The first joint publication of Fust and Schöffer was a beautiful edition of the Psalms, which came out only about eighteen months after their going into partnership. Along with it appeared a declaration by them, claiming the merit of inventing the cut-metal types with which it was printed; but this pretension was evidently false; and, in fact, it afterwards appeared that the book

had been four years in the press, and must consequently have been chiefly executed by Gutenberg. It is worthy of notice that the above publication was the very first to which the date, printer's name, and place of publication, were affixed.

To Schöffer, however, as said before, must be awarded the honour of completing Gutenberg's invention, by discovering the method of casting the characters in a *matrix*. In an account of Schöffer, given by Jo. Frid. Faustus of Aschaffenburg, from papers preserved in his family, we are informed that the artist privately prepared matrices for the whole alphabet; and when he shewed his master (Fust) the letters cast from them, he was so well pleased that he gave his daughter Christina to him in marriage. Fust and Schöffer concealed the new improvement, by administering an oath of secrecy to all whom they intrusted, till the year 1462, when, by the dispersion of their servants into different countries at the sacking of Mentz, the invention was publicly divulged, and the art was spread throughout Europe.

Concerning the period and mode of introduction of printing into England, little is known, but it is certain that it took place not long after its invention at Mentz. Antiquaries are generally agreed that the art was first practised in England by a person called Corsellis, whose press was established at Oxford. The works printed by Corsellis are, however, allowed to have been produced from cut wooden letters, and little doubt is entertained that the first printer in Britain who used metal types cast from moulds was WILLIAM CAXTON.

William Caxton was born in the Weald of Kent, about the year 1412. At this period, learning of all kinds was in a much more depressed state in England

than in most of the continental countries, in consequence principally of the civil war in which the nation was embroiled, the habits of restlessness thus produced, and the constant pre-occupation of the time and thoughts of men in promoting the cause they espoused, and in protecting their lives and property. Under these circumstances, the most plain and common education was often neglected. Caxton's parents, however, performed their duty to him. 'I am bounden,' says he, 'to pray for my father and mother, that in my youth sent me to school, by which, by the sufferance of God, I get my living, I hope truly.' When he was about fifteen or sixteen, he was put apprentice to William Large, a mercer of London, and afterwards mayor. The name *mercier* was given at the time to general merchants trading in all kinds of goods. After he had served his apprenticeship, Caxton took up his freedom in the Mercers' Company, and became a citizen of London. Some subsequent years he spent in travelling in various countries on the continent of Europe. In 1464, he was appointed ambassador to the court of the Duke of Burgundy. During his residence in the Low Countries, he acquired or perfected his knowledge of the French language, gained some knowledge of Flemish or Dutch, imbibed a taste for literature and romance, and, at great expense, made himself master of the art of printing. About 1472, Caxton returned to England, and introduced that art in an improved form into his native country. The common opinion is, that the *Game of Chess* was the first book printed by Caxton, though Mr Dibdin thinks that the *Romance of Jason* was printed before it. Caxton was most indefatigable in cultivating his art. Besides the labour necessarily attached to his press, he

translated not fewer than five thousand closely printed folio pages, though well stricken in years. The productions of his press amount to sixty-four. In 1480, he published his *Chronicle*, and the *Description of Britain*, which is usually subjoined to it. These were very popular, having been reprinted four times in the fifteenth, and seven times in the sixteenth century.

Among the books which Caxton published were two editions of Chaucer's *Tales*. He seems to have had a veneration for the memory of this poet, and to have formed, with sound judgment and good taste, a most correct and precise estimate of the peculiar merits of his poetry. As a proof of the former, it may be mentioned, that Caxton, at his own expense, procured a long epitaph to be written in honour of Chaucer, which was hung on a pillar near the poet's grave, in Westminster Abbey.

Caxton died in 1490-1, and was buried in St Margaret's Church, Westminster, to which he bequeathed a number of books.

SIR THOMAS MORE.

SIR THOMAS MORE is one of those *worthies* of whom it is delightful to write and to read. He was perhaps the first Englishman of learning and talent who became extensively known in Europe, and he was certainly the first person who acquired distinction in his own country as an orator or public speaker. In his political writings he shot far ahead of his age, and, by the force of profound reflection, anticipated many of the ideas of later and more enlightened times. With all these merits,

joined to singular integrity as a lawyer and a judge, he was, in private life, the most cheerful, innocent, and affectionate of men: there was, in his character, an almost infantine degree of simplicity, a child-like purity and softness, which has perhaps served, more than all his intellectual glories, to endear him to posterity. Altogether, Sir Thomas More is entitled to be considered one of the greatest, most perfect, and most amiable characters in the whole range of English history.

Born in 1480, the son of a lawyer of eminence, he was educated to that profession, first at Oxford, and then at New Inn in London, though his fondness for study inclined him rather to become a monk. After having entered at the bar, he married the daughter of a country gentleman named Colt, in whose house he happened to live for a short time. Colt, it seems, had three daughters, and the young barrister liked the second; however, he espoused the eldest, merely that she might not have the mortification of seeing a younger sister married before her. He very early entered parliament, and in 1503, when only twenty-three years of age, opposed a subsidy demanded by Henry VII. for a portion to his daughter (who had married James IV. of Scotland), with such eloquence, that the king's wishes were defeated. Finding himself consequently exposed to the royal anger, he retired from public life, and spent some years in study. After the death of the king in 1509, he resumed his professional duties, and speedily rose to distinction. The new sovereign, Henry VIII. admitted him to his friendship, appointed him Master of Requests, and conferred upon him the honour of knighthood. The king was perhaps as much induced to do so from the enjoyment he felt in the facetious conversation

of More, as from any appreciation of his more valuable qualities. He used to send for Sir Thomas night after night to entertain himself and the queen at supper, and would sometimes take him up to the leads of the palace in order to hear him discourse about the stars. Sir Thomas had a just sense of the real value of the king's friendship, and of his selfish and passionate character. When congratulated on being seen with the king's arm round his neck, he said he had no cause to be proud of such a mark of favour, for if his head could win his majesty a castle in France (with which Henry was then at war), it would not fail to go. Finding at length that the king engrossed too much of his time, which he wished rather to spend in study or in the bosom of his family, he found it necessary to restrain his natural humour, and make himself somewhat less entertaining, whereupon King Henry ceased to ask him so often to the palace.

In 1518, Sir Thomas became Treasurer of the Exchequer, and, five years after, he was made Speaker of the House of Commons. The whole of his public career seems to have been a violation of his natural tendencies, which would have led him rather to a learned seclusion. Having drunk deeply at the fountain of classical literature, then recently opened to the modern world, he early began to communicate his own thoughts according to that model. His most celebrated production is the *Utopia*, which he seems to have written about the year 1516, and which, under the fictitious description of an imaginary commonwealth, communicates many views of the author respecting political institutions, and the possibility of bringing them to perfection. In this noted work he makes the remarkable concession, that

no man ought to suffer for his religious creed, or his want of one ; a degree of toleration which has not yet been brought into practice, and which, it must be confessed, the author himself did not, in the subsequent part of his life, realise. He was latterly scared, by the progress of the Reformation, into the composition of many violent and narrow-spirited pamphlets against the Protestants, and even into an occasional countenancing of the use of torture for their correction. It is but an additional proof of the imperfection of the very best human qualities, that the mildest and most upright man of his age should have tarnished his fame by recording sentiments alike cruel and unjust.

While he acted as Speaker in the House of Commons, the king had occasion for a large subsidy, which it was anticipated that the parliament would have some difficulty in granting. Cardinal Wolsey therefore came to the House with a magnificent train, in order to give the request all possible weight. When this great minister of the crown had finished his speech, he was surprised to find that the House remained silent, and turned in a rage to the Speaker, whom he more particularly expected to give an answer. Sir Thomas, however, though favourable to the royal wishes, stated that it was not customary for parliament to answer the messages of the king, except by some of its own members, and, for his part, 'although, as Speaker, he was to be considered as the voice of the House of Commons, yet, till every one of them put their several judgments into his head, he could say nothing.' At this answer, which has become famous in English history, the cardinal retired in a rage, and made several strenuous but ineffectual attempts to ruin Sir Thomas with the king.

In 1529, at the downfall of Wolsey, Sir Thomas More succeeded him as Lord Chancellor, being the first layman who ever filled the office. At this time, Sir Thomas's father was still alive, and held the dignified but inferior office of a judge in the Court of King's Bench. Sir Thomas, however, to mark that he still owed filial obedience to his parent, used to go into the King's Bench every day as he entered Westminster Hall, and, if his father had taken his seat, would kneel down before him for his blessing. The anecdote is characteristic of an age in which many simple virtues flourished amidst much brutality and ignorance.

By far the most engaging view of More's character is in the relations of private life. It is seldom we are enabled to contemplate statesmen with their minds unbent from exertion; and the admiration which their public exhibitions had raised, is not always increased by a closer inspection. But of More's *domestic* life we have ample details; and it is the contrast of his great elevation and profound knowledge, with his tenderness of affection, and his playfulness, simplicity, and unaffected serenity of temper, which forms the true sublime of his character. In him there is no disguise of artificial representation, no *management* of conduct to produce effect; every act flows, without effort, from the even tenor of a mind well poised on itself, which nothing external can either elevate or depress. We do not follow him from the Speaker's chair or the woolsack, to see him put off the robes of greatness, and resume the man; but we go with him from the bosom of his family, to see him retain, in those dignified seats, all the child-like simplicity and unaffected lowliness of his nature.

He was twice married. His first wife lived only long

enough to produce him all the family he ever had, three daughters and a son. His second partner was a lady named Alice Arderne, a widow, and, as More himself says, *nec bella nec puella*; that is, neither handsome nor young. She was indeed seven years older than her husband, and, in point of temper and intellect, altogether unworthy of him. The same simplicity which actuated him in the selection of his first wife, is supposed to have, in this union, made him the victim of trick and cunning. Whatever her demerits might be, they had no effect upon the cheerful and serene temper of Sir Thomas More. The following letter to her is so illustrative of his equanimity and mild benevolence, and so good a specimen of his English style, that we give it to the reader without abridgment. It was written immediately after his return from assisting at the negotiations at Cambray, and was meant to comfort his penurious wife for a fire which had consumed part of his house, all his barns, and some of those of his neighbours.

‘MISTRESS ALICE, in my most heartywise I recommend me to you. And whereas I am informed by my son Heron of the loss of our barns and our neighbours’ also, with all the corn that was therein; albeit (saving God’s pleasure) it is great pity of so much good corn lost; yet, since it has liked Him to send us such a chance, we must, and are bounden, not only to be content, but also to be glad of His visitation. He sent us all that we have lost; and since He hath by such a chance taken it away again, His pleasure be fulfilled! Let us never grudge thereat, but take it in good worth, and heartily thank Him, as well for adversity as for prosperity. And peradventure we have more cause to thank Him for our loss than for

our winning ; for His wisdom better seeth what is good for us than we do ourselves. Therefore, I pray you be of good cheer, and take all the household with you to church, and there thank God, both for that He hath given us, and for that He hath taken from us, and for that He hath left us ; which, if it please Him, He can increase when He will ; and if it please Him to leave us yet less, at His pleasure be it !

‘ I pray you to make some good onsearch what my poor neighbours have lost, and bid them take no thought therefor ; for if I should not leave myself a spoon, there shall no poor neighbour of mine bear no loss by my chance, happened in my house. I pray you be, with my children and your household, merry in God ; and devise somewhat with your friends what way were best to take for provision to be made for corn for our household, and for seed this year coming, if we think it good that we keep the ground still in our hands. And whether we think it good that we so shall do or not, yet I think it were not best suddenly thus to leave it all up, and to put away our folk from our farm, till we have somewhat advised us thereon. Howbeit, if we have more now than ye shall need, and which can get them other masters, ye may then discharge us of them. But I would not that any man were suddenly sent away, he wot not whither.

‘ At my coming hither, I perceived none other but that I should tarry still with the king’s grace. But now, I shall, I think, because of this chance, get leave this next week to come home and see you : and then shall we further devise together upon all things what order shall be best to take.

‘ And thus, as heartily fare you well, with all our

children, as ye can wish !—At Woodstock, the third day of September, by the hand of THOMAS MORE.'

Sir Thomas More is said to have not been fortunate in his son. He used to say that his wife had prayed long for a boy, and now she had got one who would be a boy all his life. His daughters, however, especially the eldest, Margaret, were more than worthy of their father. They were excellent classical scholars, and wrote Latin with the greatest purity. Margaret, who was married to a gentleman named Roper, was a woman of extraordinary understanding, and possessed all the gentle virtues of her father. Sir Thomas was so devoted to her, that, during a dangerous illness with which she was visited, he resolved, if she had died, to withdraw himself wholly from the world ; and her recovery was imputed to the efficacy of his prayers. She was the dispenser of her father's secret charities ; and to her alone he intrusted the knowledge of the severe religious austerities to which he subjected himself—his hair-shirt and his repeated scourgings—in some of which self-inflicted penances she imitated her parent.

Sir Thomas lived with his wife, his amiable children, and other relations, in a house which he had built for himself at Chelsea ; and nothing can be more delightful than the picture which has been drawn of his domestic circle by his friend Erasmus, who visited him there. ' He lives at Chelsea, near London, in a commodious house, neither mean nor subject to envy, yet magnificent enough ; there he converseth affably with his family, his wife, his son and daughter-in-law, his three daughters and their husbands, with eleven grandchildren. There is not any man living so loving to his children as he ; and

he loveth his old wife as well as if she were a young maid ; and such is the excellency of his temper, that whatsoever happeneth that could not be helped, he loveth it as though nothing could happen more happily. You would say there were in that place Plato's Academy ; but I do the house injury in comparing it to Plato's Academy, wherein there were only disputations of numbers and geometrical figures, and sometimes of moral virtues. I should rather call his house a school, or university of Christian religion ; for there is none therein but readeth or studieth the liberal sciences ; their special care is piety and virtue ; there is no quarrelling or intemperate words heard ; none seen idle ; which household discipline that worthy gentleman doth not govern by proud and lofty words, but with all kind and courteous benevolence. Everybody performeth his duty, yet is there always alacrity, neither is sober mirth anything wanting. He suffered none of his servants either to be idle or to give themselves to any games ; but some of them he allotted to look to the garden, assigning to every one his sundry plot ; some again he set to sing, some to play on the organ : he suffered none to give themselves to cards or dice. The men abode on the one side of the house, the women on the other, seldom conversing together ; he used before bedtime to call them together, and say certain prayers with them.'

This harmless and happy life was suddenly destroyed. After executing the duties of Chancellor with singular zeal and impartiality, he resigned the office in May 1532, partly because he could not countenance the divorce of the king from Catharine of Aragon. By absenting himself from the coronation of the new queen, Anne Boleyn, he provoked the king's anger to such a degree, that a

charge was brought against him of misprision of treason, for his conduct in the affair of an impostor called the Maid of Kent. The evidence adduced in this case was defective, and he escaped ; but a crisis was at hand which no honest man could evade. In 1534, an act was passed by which every subject was required to take an oath for the maintenance of the succession in the issue of the king's marriage by Anne Boleyn ; and as Sir Thomas refused to do so, he was thrown into the Tower, where he remained about a year. Henry is not supposed to have at first contemplated the ruin of his illustrious counsellor ; he earnestly wished to have the approbation of so popular a man to his new alliance, and he thought that imprisonment would obtain what he wanted : gradually, however, as he found sterner and severer measures unavailing, he contracted that virulent hatred against the venerable prisoner which induced him to persecute him to the scaffold. Sir Thomas was brought to trial, May 7, 1535, when, though only fifty-five years of age, he appeared much broken down by the severity and long continuance of his imprisonment, but yet seemed to possess the same serene and cheerful spirit as ever. His faculties were undisturbed, and the mild dignity of his character did not forsake him. As was to be expected, he was found guilty, and sentenced to die the death of a traitor, which, however, was commuted by the king into simple decapitation ; a boon which Sir Thomas acknowledged by one of those lively sallies for which he was as much celebrated as for his graver talents : ' God forbid,' said he, ' the king should use any more such mercy unto any of my friends ; and God bless all my posterity from such pardons.'

On his return from Westminster, where he had been

tried, he was met on the Tower Wharf by his eldest daughter, the noble Margaret Roper, who feared she might have no other opportunity of seeing him. He stretched out his arms, in token of a blessing, while she knelt at some distance to implore and receive it. This, however, would not satisfy the strong affection of the daughter, who, according to the narrative of her husband, hastening towards him, without consideration or care of herself, pressing in amongst the throng, and the arms of the guard, that with halberds and bills went around him, ran to him, and openly, in presence of them all, embraced him, took him about the neck, and kissed him. He, well liking her most natural and dear daughterly affection, gave her again his fatherly blessing.

The execution of this venerable person took place July 6, when, so far from being depressed by his unfortunate condition, he talked with all his usual gaiety, and even jested as he laid his head upon the block. The love of Margaret Roper continued to display itself in those outwardly unavailing tokens of tenderness to his remains by which affection seeks to perpetuate itself; ineffectually, indeed, for the object, but very effectually for softening the heart and exalting the soul. She procured his head to be taken down from London Bridge, kept it during her life as a sacred relic, and was buried with that object of fondness in her arms, nine years after she was separated from her father.

The death of More excited the sorrow and indignation of all the eminent men throughout Europe, almost without regard to religious belief; and it has been held by posterity as perhaps the most signal instance of wickedness in the history of Henry VIII.

FRANCIS BACON.

THIS illustrious philosopher was the son of Sir Nicholas Bacon, Lord-keeper of the Great Seal, and Anne, daughter of Sir Anthony Cook, tutor to Edward VI. and was born in London, January 22, 1561. The sprightliness of mind which he displayed in boyhood caused Queen Elizabeth to converse with him frequently, and to style him her young Lord-keeper. In 1573, he was entered a student at Trinity College, Cambridge, where the progress of his intellect was so very rapid, that, before completing his sixteenth year, he had satisfied himself of the futility of the Aristotelian mode of reasoning, which had bewildered the human intellect for centuries, and which he was destined to supplant by the true philosophy, since pursued with so much advantage to mankind. At this period of his life, he was placed under the charge of Sir Amias Powlet, the queen's ambassador in France, where he gathered innumerable facts useful to an English statesman, which he formed, before his nineteenth year, into a *Treatise on the State of Europe*. The unexpected death of his father having obliged him to choose a profession, he adopted that of the law, and studied it with great assiduity at Gray's Inn, but without neglecting philosophical pursuits. It was here that, at the age of twenty-six, he formed the first sketch of his great work, *The Instauration of the Sciences*.

His first preferment was to the post of Counsel Extraordinary to the queen, which brought him rather honour

than profit. His contracted circumstances leaving him no other choice than between virtuous poverty and the dependence of a courtier, he was so unfortunate as to choose the latter. He was at first an adherent of the Earl of Essex, who used every exertion to obtain his advancement, but was thwarted at every step by the secretary Cecil. Afterwards, when Essex lost the favour of the queen, and became a rebel against her authority, Bacon, in whom the selfishness of ambition had deadened every better principle, consented not only to plead against him, but disclosed some confidential letters, which went a great way to prove his guilt. Against such unworthy and heartless conduct, this period of his life only presents some rather spirited appearances which he made in the House of Commons, in behalf of the popular rights.

Till the accession of King James, Bacon made little advance either in reputation or in fortune. His learning having recommended him to the king, he was knighted, and appointed king's counsel, with a salary of forty pounds a year. In consideration of the merit of his work *On the Advancement of Learning*, published in 1605, he was appointed, two years after, to the post of Solicitor-general; and about this time his practice as a lawyer became both extensive and profitable. If Bacon had been content to wait upon fortune, he could have hardly failed, with the first abilities of his time, to reach, without discredit, the highest honours of the state. But the eagerness of his ambition, joined to a certain softness and facility of disposition, by which he was disabled, as it were, for the entertainment of high and manly principle, caused him to seek elevation by means which have stamped his name with infamy. Not only was he

content to present an almost impious kind of flattery to his weak sovereign, but he stooped to become the minion of a minion—namely, Villiers, Duke of Buckingham, who had been recently raised from obscurity to the highest court honours, merely on account of his possessing a handsome person. By such means, and by writing to the king a letter studiously depreciating all the other great lawyers of his day, he obtained, in March 1617, the appointment of Lord-keeper, and, two years after, that of Lord Chancellor, with the title of Baron Verulam, subsequently exchanged for that of Viscount St Albans.

Without apparently gaining much personal esteem, Bacon had at this time obtained the highest reputation as a philosophical writer. To the *Proficiency and Advancement of Learning*, published in 1605, and afterwards republished in an extended form, was added, in 1620, the *Novum Organum*, which was designed as a second part of his grand work, *The Instauration of the Sciences*. Another portion, intended to complete the work, was never produced. The objects of the whole work were, to answer the objections made to the progress of knowledge, to classify the branches of knowledge, and to explain a new method of employing the faculties for the increase of knowledge ; namely, to ascertain facts in the first place, and then to reason upon them towards conclusions—a mode which may now appear very obvious, and even unavoidable, but which was nevertheless unknown till explained by him. To come to particulars, Bacon tells us :

‘ 1. That the ultimate aim of philosophical investigation is to bring the course of events, as much as possible, under our own control, in order that we may turn it to our own advantage.

‘ 2. That as each event depends upon a certain combination of circumstances which precede it, and constitute its cause, it is evident we shall be able to command the event, whenever we have it in our power to produce that combination of circumstances out of the means which nature has placed within our reach.

‘ 3. That the means of producing many events which we little dream of, are actually placed within our reach ; and that nothing prevents us from using those means, but our inability to select them from the crowd of other circumstances by which they are disguised and surrounded.

‘ 4. That, therefore, we should endeavour, by diligent observation, to find out what circumstances are essential, and what extraneous, to the production of each event ; and its real cause being stripped free from all the perplexing concomitants which occur in nature, we shall perceive at once whether we can command the circumstances that compose it or not. This, in short, is to generalise ; and having done so, we shall sometimes discover that objects, which of all others appeared the most useless, remote, and inapplicable to our purpose, possess the very properties we are in search of. Nature stands ready to minister to our designs, if we have only the sagacity to disentangle its operations from one another, to refer each event to its real source, and to trace the powers and qualities of objects into their most abstract form.

‘ In pursuing the dictates of this noble philosophy, man is no longer impotent and ridiculous. He calmly vanquishes the barriers which oppose his wishes—he eludes the causes of pain—he widens the range of enjoyment—and, at the same time, feels the dignity of intellect, which,

like a magician's talisman, has made all things bow before his feet.

'To this extraordinary individual we are indebted also for an attempt to reduce the chaos of literature into some degree of order ; and to shew that, notwithstanding the multiplicity and variety of books, there are only three different objects, to one or other of which the contents of every book must apply. According to Lord Bacon, human knowledge is resolvable into history, philosophy, and poetry. By history, is meant a statement of particular events which have occurred in past time. By philosophy, is meant the knowledge of general facts, concerning the relation of one phenomenon to another. By poetry, is meant an assemblage of ideas brought together for the purpose of exciting emotion.

'Lord Bacon's *Essays* are by no means the least part of his philosophy. Wisdom has never appeared in a garb so closely adapted to her person. Every subject is treated with a clear and luminous brevity, which places the propositions side by side, without any intermediate ornament. A florid discourse may astonish us, but it is a simple one like this which enables us to arrive at conclusions.' These *Essays* are the most popular of his writings, being devoted to subjects and involving thoughts which, as he says of them himself, 'come home to men's business and bosoms.' They often unite the most profound philosophy with the most fanciful illustration and poetical language, and sometimes display an almost scriptural pathos, as in the following beautiful passage :

'The parts and signs of goodness are many. If a man be gracious and courteous to strangers, it shews he is a citizen of the world, and that his heart is no

island cut off from other lands, but a continent that joins to them. If he be compassionate towards the afflictions of others, it shews that his heart is like a noble tree that is wounded itself when it gives the balm. If he easily pardons and remits offences, it shews that his mind is planted above injuries, so that he cannot be shot. If he be thankful for small benefits, it shews that he weighs men's minds, and not their trash.'

Another specimen of Bacon may be given from his praises of learning: ' Learning taketh away the wildness, barbarism, and fierceness of men's minds ; though a little of it doth rather work a contrary effect. It taketh away all levity, temerity, and insolency, by copious suggestion of all doubts and difficulties, and acquainting the mind to balance reasons on both sides, and to turn back the first offers and conceits of the kind, and to accept of nothing but [what is] examined and tried. It taketh away all vain admiration of anything, which is the root of all weakness ; for all things are admired, either because they are new, or because they are great. . . . If a man meditate upon the universal frame of nature, the earth with men upon it (the divineness of souls excepted) will not seem more than an ant-hill, where some ants carry corn, and some carry their young, and some go empty, and all to and fro a little heap of dust. It taketh away or mitigateth fear of death, or adverse fortune ; which is one of the greatest impediments of virtue, and imperfection of manners. . . . Virgil did excellently and profoundly couple the knowledge of causes and the conquest of all fears together. It were too long to go over the particular remedies which learning doth minister to all the diseases of the mind—sometimes purging the ill humours, sometimes opening the obstructions, sometimes

helping the digestion, sometimes increasing appetite, sometimes healing the wounds and ulcerations thereof, and the like; and I will therefore conclude with the chief reason of all, which is, that it disposeth the constitution of the mind not to be fixed or settled in the defects thereof, but still to be capable and susceptible of reformation. For the unlearned man knoweth not what it is to descend into himself, and call himself to account; nor the pleasure of that *most pleasant life which consists in our daily feeling ourselves become better*. The good parts he hath, he will learn to shew to the full, and use them dexterously, but not much to increase them; the faults he hath, he will learn how to hide and colour them, but not much to amend them; like an ill mower, that mows on still and never whets his scythe. Whereas with the learned man it fares otherwise, that he doth ever intermix the correction and amendment of his mind with the use and employment thereof.'

It is distressing to know that this great man, in his latter years, was guilty of certain moral delinquencies. In 1621, it was discovered that, under the pressure of temptation, he had accepted bribes from suitors in the Court of Chancery, for which offence he was imprisoned in the Tower, and pronounced incapable of holding office or of ever sitting in parliament. This reverse of fortune was humiliating and salutary. On his release from confinement, he pursued his philosophical researches to the last, in the midst of bodily infirmities brought on by intense study, by multiplicity of business, and, above all, by anguish of mind. In the winter of 1625, his health was much improved, but he died the following year, 9th April 1626. Succeeding generations remember with gratitude what Bacon did for the advancement of science.

BLAISE PASCAL.

BLAISE PASCAL was born at Clermont, in Auvergne, in France, in the year 1623. His father was a judge in one of the district courts, and is reported to have been a man of considerable learning and an able mathematician. As Blaise was his only son, so great was his affection for him, that in the year 1631 he relinquished his official situation, and settled at Paris, in order that he might himself undertake the employment of being his tutor.

From his infancy, young Pascal gave evidence of a very extraordinary capacity. He was very inquisitive, and desirous of knowing the reasons of everything; and when good reasons were not given him, he would search for better; nor would he ever be satisfied but by such as appeared to him to be well founded. What we are told concerning his manner of learning mathematics, and his rapid progress in that science, is very astonishing. His father, perceiving in him an extraordinary inclination to reasoning, was afraid lest the knowledge of mathematics should prevent him from learning the languages. He therefore resolved to keep from him, as much as he could, all notions of geometry, locked up all the books that treated of it, and refrained even from speaking of it in his presence. Yet he could not refuse to give this general answer to the importunate curiosity of his son: 'Geometry is a science which teaches the way of making exact figures, and of finding out the proportions between them;' but at the same time forbade him to

speaking or thinking of it any more. The slight idea which had been thus conveyed to him of the science, occupied young Blaise's thoughts, and led him in his hours of recreation to make figures on the chamber-floor with charcoal, the proportions of which he sought out, laying down definitions and axioms, and then going on to demonstrations. So far had he proceeded with his inquiries, that he had come to what was just the same with the thirty-second proposition of the First Book of Euclid, when he was one day surprised in the midst of his figures by his father, who asked him what he was doing. He replied, that he was searching for such a thing, which was just that proposition of Euclid. When asked afterwards how he came to think of this, he answered that it was because he had found out such another thing; and so, going backwards, he at length came to the definitions and axioms which he had formed to himself. Astonishing as it may appear that a boy of twelve years should be capable of thus working his way into the mysteries of a science without having seen any treatise upon the subject, or even knowing anything of the terms; and surprising as it is that he should have, in the course of his boyish researches, hit upon exactly the same combination of figures which had been adopted by an ancient philosopher for proving a particular mathematical truth; yet we are assured of the fact by Madame Perier, Pascal's sister, and several other writers, the credit of whose testimony is unquestionable.

From this time young Pascal had full liberty to indulge his genius in mathematical pursuits, and was furnished by his father with Euclid's *Elements*, of which he made himself master in an incredibly short time without any assistance. So wonderful was his proficiency in

mathematical science, that at the age of sixteen he wrote *A Treatise on Conic Sections*, which was approved of by the most learned men of the age. At nineteen, our young mathematician had contrived a machine capable of making a number of arithmetical calculations without any other assistance than the eye and the hand. This was esteemed a very wonderful thing, which would have done credit to any man of mature years. About this time the state of his health becoming impaired, owing, probably, to the intenseness of his studious application, he was obliged to suspend his labours for the space of four years. At the age of twenty-three, having seen Torricelli's experiments respecting a vacuum and the weight of the air, he directed his attention to those subjects, and made several new experiments, by which the weight of the atmosphere at different heights—a scientific fact of great moment—was fully demonstrated. The results of his investigations were immediately published, and communicated by him to all the learned bodies in Europe.

The reputation which Pascal thus acquired by his scientific labours occasioned his being frequently consulted by some of the greatest mathematicians and philosophers of the age, who applied for his assistance in the resolution of various difficult questions and problems. Among other subjects on which his ingenuity was employed, was the solution of a problem proposed by Father Mersenne, which had baffled the penetration of all who attempted it. This was, to determine the curve described in the air by the nave of a coach-wheel while the machine is in motion; which curve was then called a rouquette, but is now commonly known by the name of cycloid. As a spur to genius, M. Pascal offered a reward

of forty pistoles to any one who should give a satisfactory answer to it. No person having succeeded, he published his own solution at Paris ; but as he now began to grow disgusted with the sciences, he would not send it into the world under his own name, but prefixed to it that of A. D'Etonville. This exertion of his genius was a triumph over all the old mathematicians of Europe, and it was made in circumstances which cannot but excite astonishment ; for we are informed that he made the discovery, as it were, in spite of himself, and to his own great surprise, while passing sleepless nights in his bed, tormented by severe paroxysms of toothache.

When M. Pascal was in the twenty-fourth year of his age, and the highest expectations were entertained of the advantages to science from his future labours, he all at once renounced the study of mathematics and natural philosophy, as well as all human learning, and devoted himself wholly to a life of mortification and prayer. From this time he renounced all pleasure and all superfluity ; and to this system he adhered in the illnesses to which he was frequently subject, being of a very infirm habit of body. He not only denied himself the most common gratifications, but he also took without reluctance, and even with pleasure, either as nourishment or as medicine, whatever was disagreeable to the senses ; and he every day retrenched some part of his dress, food, or other things, which he considered as not absolutely necessary. He occasionally wore an iron girdle full of points next to his skin ; and when any vain thought came into his mind, or he took pleasure in any circumstance, he gave himself some blows with his elbow, to increase the violence of the smart, and by that means put himself in mind of what he thought his duty.

He also broke off all voluntary intercourse with society, changed the place of his abode, and spoke to no one, not even to his own servants, whom he hardly ever admitted into his room. He made his own bed, fetched his dinner from the kitchen, and carried back the plates and dishes in the evening ; so that he employed his servants only to cook for him, to go on a few unavoidable errands, and to do such things for him as he was incapable of performing himself. Nothing was to be seen in his chamber but two or three chairs, a table, a bed, and a few books. It had no kind of ornament whatever ; he had neither a carpet on the floor nor curtains to his bed. These circumstances, however, did not prevent him from occasionally receiving visits ; and when his friends appeared surprised to see him thus without furniture, he replied, that he had what was necessary, and that anything more would be a superfluity unworthy of a wise man. During the latter years of his life, his principal relaxation from the rigorous system which he prescribed to himself consisted in visits which he paid to the churches where some relics were exposed or some solemnity observed ; and for that purpose he had a spiritual almanac, which informed him of the places where particular services were performed.

Prostrated as Pascal's physical powers were by these religious exercises, he nevertheless shewed that intellect was not dead within him. He entered keenly into a quarrel between Jansenists and Jesuits, taking the part of the former. The work which Pascal wrote on this occasion was entitled *Provincial Letters* ; and both from its serious tone of reasoning and its happy turns of wit, as well as from the humour and taste of the age, it obtained very extensive celebrity. This

controversial production did less to establish the fame of this extraordinary man than a work which he wrote about the same period, of a devotional and moral nature, but which was not given to the world till after his decease. The manner in which this work was written is curious. While living in ascetic retirement from the world, he was in the habit of writing down stray thoughts on religious and moral subjects on the first piece of paper which he could find. After his death these bits of paper were found filed upon different pieces of string without any order or connection; and being exactly copied as they were written, they were afterwards arranged and published under the title of *Pensées de M. Pascal*, &c. (Thoughts of M. Pascal upon Religion and some other Subjects). These *Pensées*, or thoughts, have been translated from the French into the English and various other languages, and exhibit striking traits of his sublimity of genius, beautiful turn of sentiment, as well as force and elegance of expression.

Pascal was little more than thirty years of age when he was engaged in framing these controversial and devotional productions. As a result both of his wonderful precocity of intellect, and of the treatment to which he subjected himself, he declined both in body and mind much earlier than is the ordinary lot of mankind. At thirty-six years of age he had the infirmity of a man of fourscore. His health from this time rapidly declined, and his disorders so enfeebled his brain that his reason became in some measure affected. In these circumstances he met with an accident which produced an unfavourable impression upon his imagination, not to be effaced, excepting during short intervals, by the soothing persuasions of his friends and of his confessor. In

the year 1654, the state of weakness to which he was reduced having alarmed his physicians, they prescribed to him taking the air and gentle exercise. As he was one day crossing the Seine at the bridge of Neuilly, in a coach-and-four, the two leading horses became unmanageable at a part where the parapet was down, and plunged over the side into the river. Happily, their weight broke the traces, by which means the other horses and the carriage were extricated on the brink of the precipice. The effect on the feeble and languishing frame of M. Pascal may easily be conceived. It was with great difficulty that he was recovered at all from a long swoon; and he was never reinstated in the calm possession of his mental faculties. He always imagined that he saw a deep abyss on the left side of him, and he would never sit down till a chair was placed there, to secure him from danger. He also persuaded himself that he had a kind of vision, the particulars of which he preserved in a memorandum on a piece of paper, which he always carried about him between the cloth and lining of his coat. After languishing for some years in this imbecile state of body and mind, Pascal died at Paris in 1662, when about thirty-nine years of age.

The moral which may be drawn from the life of Pascal is so obvious that it hardly requires to be pointed out. We find here a man who inherited from nature all the powers of a versatile genius; a geometrician of the first rank; a profound reasoner; an elegant writer, whose collected works extend to many large volumes; and a person who was remarkable for the amiableness of his disposition: yet we find also a man who, it will be acknowledged, forsook the clear path of his duty, as a responsible being, and who, with whatever

conscientiousness of feeling, followed a course of life which doubtless assisted greatly to derange his faculties, and brought him to a premature grave.

LINNÆUS.

CHARLES LINNÉ, better known by his Latinised name, LINNÆUS, was the son of a poor village pastor, and was born at Rashult, in the province of Smaland, in Sweden, in the year 1707. To great originality of genius, were joined an enthusiastic disposition, and a steadiness of perseverance, which enabled him to make his way through poverty and obscurity to a distinguished pre-eminence as a man of science and learning. An ardent love for the study of nature, especially for botanical knowledge, early took possession of him. While yet a boy, he seems to have been fonder of rambling about the fields, and perusing the great book of nature, than the folios of the schools; for so little satisfaction does he seem to have given his first teachers, that his father, dissatisfied with the reports of his progress, contemplated binding him to the trade of a shoemaker. The intervention of friends, and his own earnest entreaties, however, at last persuaded his parent to permit him to study the profession of medicine. At the university we find him rising into distinction, even in the midst of extreme poverty—in want of books—in want of clothes—in want of bread to eat—and even patching up old shoes with the bark of trees, to enable him to wander into the fields in prosecution of his favourite study of botany.

While yet a mere youth, he was selected, by the

Academy of Sciences of Upsal, to explore the dreary regions of Lapland, and to ascertain what natural productions they contained; and we find him embracing with ardour this laborious and solitary undertaking, with a pittance barely sufficient to defray the expenses of his journey. After his return from this scientific expedition, he commenced a course of public lectures on botany and mineralogy in the University of Upsal; he was full of the subject, and the novelty and originality of his discourses immediately drew around him a crowded audience: but envy, which too often is the malignant concomitant of rising talent, soon blasted his fair prosperity. It was discovered that, by a law of the university, no person was entitled to give public lectures unless he had previously taken a degree. Linnæus, unfortunately, had obtained no academical honours, a circumstance which involved him in a violent quarrel with Dr Rosen, the Professor of Medicine. Fortunately, his friends interposed to soothe his resentment; and he forthwith departed from Upsal, along with some of his pupils, and made a mineralogical and botanical excursion into the province of Dalecarlia. At Fahlun, the capital of this province, he became acquainted with Dr Moräus, the chief physician. The doctor was a kind and learned man, and had plants and flowers which excited the admiration of the young botanist; but he had a fairer flower than any which Linnæus had ever yet beheld in garden or meadow. In short, for the eldest daughter of Dr Moräus our botanist conceived an ardent affection; his admiration was met by the young lady with a grateful attachment; and, in accordance with the ardour and enthusiasm of his disposition, Linnæus solicited of the father the young lady's hand in

marriage. The good doctor had conceived a liking for the young, learned, and eloquent stranger—he loved him and his pursuits, and his ingenuous bearing ; but he tenderly loved his daughter also, and, more cool and considerate than the young and fond lovers, foresaw that a poor friendless young man, without any fixed profession or employment, was not likely to improve his own or his daughter's happiness by such a rash step. He therefore persuaded him to delay the match for three years ; that his daughter should remain unmarried in the meantime ; and if, at the end of that period, he (by the study of medicine, which he strongly recommended) was in a condition to marry, his sanction to the nuptials would be readily given.

Nothing could be more reasonable than this proposal. Linnæus summoned his philosophy to his aid. It was resolved that he should forthwith depart for Leyden, in order to obtain a degree. Before his departure, Miss Moräus brought forth her accumulated saving of pocket-money, amounting to a purse of one hundred dollars, and laid it at his feet as a love-offering and unequivocal proof of her attachment. He pressed her fair hand, kissed her fervently, and, with a heart glowing with the most unbounded attachment and admiration of her generosity, he bade her farewell.

Many a poetical lover would have gone forth dreaming in reverie, writing sonnets alternately to his mistress and the moon, and ever and anon bewailing his hard fate at the awful and interminable separation. Not so our philosopher ; he went forth cheered and stimulated with the thought that there was one who loved him and his pursuits, and to merit whose attachment he was resolved to strain every nerve in the path of learning

and distinction. At Leyden he prosecuted his studies with his wonted assiduity ; attracted the notice of Dr Boerhaave and other celebrated men of science ; was appointed family physician to the burgomaster of Amsterdam ; produced, during the two years he held this situation, many of his most elaborate works ; and visited England and other countries in quest of knowledge. Indeed, the extent of his labours and his indefatigable industry during this period, is almost incredible. There was almost no department of natural science which he did not investigate, and bring within the compass of his methodical arrangements ; but botany was his chief and favourite study, and in this department he raised himself a reputation which can only perish with the science itself.

In 1738, he made an excursion to Paris, and towards the end of that year returned to his native country, and settled himself as a physician at Stockholm. At first he experienced neglect ; but at length, being fortunate enough to prescribe successfully for a cough which troubled Queen Eleonora, he henceforth became the fashionable doctor of Stockholm, and was appointed physician to the Admiralty, and botanist to the king. Having now a settled income, he married the lady of his affections five years after his first courtship. Not long afterwards he was appointed medical professor in the university of Upsal ; and his former enemy, Rosen, having obtained the botanical chair of that university, an amicable adjustment was made, by which they exchanged their professorships ; and Linnæus saw himself seated in the botanical chair of the university, which, from the first, had been the chief object of his ambition, and which he continued to fill with distinguished honour for a period of thirty-seven years.

Through his influence, many young naturalists were sent to explore various countries ; and to his zeal in the cause of science we owe the discoveries in natural history made by Kalm, Osbeck, Hasselquist, and Loeffling. He was employed by the queen of Sweden to describe her museum at Drottningholm, when he made a new scientific arrangement of the shells contained in it. About 1751, he published his *Philosophia Botanica*, and in 1753, his *Species Plantarum*, containing a description of every known plant, arranged according to the sexual system. This work of Linnæus, which may be termed his greatest and most imperishable production, appeared originally in two volumes octavo ; but the edition published at Berlin, 1799-1810, is extended to ten volumes.

In 1753, this great naturalist was created a knight of the Polar Star, an honour never before bestowed on a literary man. In 1761, he was elevated to the rank of nobility. Literary honours were also conferred on him by scientific societies in foreign countries. In 1768, he completed the plan of his *Systema Naturæ*, which, through successive editions, had been enlarged to three octavo volumes. Linnæus acquired a moderate degree of opulence, sufficient to enable him to purchase an estate and mansion at Hammarby, near Upsal, where he chiefly resided during the last fifteen years of his life. There he had a museum of natural history, on which he gave lectures, and to which he was constantly making additions, from the contributions of travellers and men of science in various parts of the world.

His health, during a great part of his life, enabled him to pursue his researches with vigour and activity ; but in May 1774, he had an apoplectic attack, which

obliged him to relinquish the most laborious part of his professorial duties, and close his literary labours. A second attack occurred in 1776, and he afterwards experienced a third; but his death did not take place till January 10, 1778. Besides his works on natural history, he published a classified *Materia Medica*, and a systematic treatise on nosology, entitled *Genera Morborum*. Few men in the history of science have shewn such boldness, zeal, activity, and sagacity, as Linnæus: natural science is under unspeakable obligations to him, though the different systems established by him may be superseded by more perfect ones. Charles XIV. king of Sweden, in 1819, ordered a monument to be erected to him in his native place.

BOERHAAVE, HALLER, AND CULLEN.

To these three eminent men, mankind are indebted for the extrication of the science of medicine from the mass of absurdities heaped around it by the fanciful speculations and misplaced learning of early ages. Boerhaave led the way in developing the true principles of the medical art, and Haller and Cullen followed worthily in his footsteps.

HERMANN BOERHAAVE was born, December 13, 1668, in the village of Voorhout, near Leyden, in Holland. His father, who was pastor of Voorhout, and bore a high reputation for learning and piety, destined him to succeed him in his ministry, and gave him an education suitable to these views. Young Hermann amply repaid his father's cares, being at the age of eleven an excellent

classical scholar. At the age of fourteen, he was sent to Leyden for the continuance of his religious studies. An accident, however, had given him, some years before, a strong inclination for the science in which he afterwards rose to such eminence. He had been afflicted with an ulcer, which resisted every attempt to heal it on the part of the family physician. Young as he was, Hermann formed the opinion that the remedies employed rather obstructed than assisted nature in her healing process. He made search for some simpler remedy, and, in the end, had the satisfaction to find the ulcer close up, under no other treatment than that of being kept clean. Whether we are to attribute much permanent influence to this incident or not, certain it is that he retained throughout his studies a bent towards medicine. His first distinctions, however, were gained in general philosophy. An oration pronounced before the university, in refutation of the doctrines of Epicurus and Spinoza, acquired him, at the age of twenty, a high reputation for eloquence and ability, and he was rewarded with a gold medal, the gift of the city of Leyden.

Though his father had died shortly after his entrance to the university, Boerhaave still continued, in accordance with the paternal wish, to look forward to the ministry. At the same time, thinking the two professions not incompatible, he devoted himself ardently to the study of medicine, and, in 1693, took a doctor's degree at Harderwick, whither he had gone for the better conveniences it afforded for medical pursuits. On his return to Leyden, he was surprised to find obstacles raised against his reception to the ministry, on the score of favouring unsound doctrines. This was a gross calumny, piety being one of the most marked features of his

character. The world, however, lost nothing by it. Boerhaave was constrained to attach himself solely to the practice of physic at Leyden for a livelihood, and his talents speedily became known and valued. In 1701, the university raised him to a public lectureship on the theory of medicine, and at the solicitation of the students, he also undertook lectures on chemistry.

From this period is to be dated the commencement of his fame as a teacher, for opportunity was all that was necessary to disclose such talents as those of Boerhaave. During the interval between these first appointments and his elevation, in 1709, to the professorship of physic and botany, his name became known over Europe, and students from all quarters thronged to Leyden, for the benefit of his instruction. Other universities endeavoured to attract him to their halls, but Boerhaave preferred those which had nurtured him, though the emoluments were inferior. By the addition, however, of the chemical professorship, in 1718, to the former two chairs, his merits were more adequately rewarded than they had previously been.

Boerhaave's fame as a teacher was sustained, during the continuance of his career, by the works which he issued, though it was only by personal intercourse that the great beauty of his character could be fully known and appreciated. 'Some, though few,' says his disciple Haller, 'may rival him in erudition; his divine temper, kind to all, beneficent to foes and adversaries, detracting from no man's merits, and binding by favours his daily opponents, will never perhaps be paralleled.' Such was the *man* whom his pupils almost idolised; the *teacher*, whom they listened to with admiration, was not less worthy. Clear definitions and lucid ideas, bound

together in one methodical chain, were presented to his hearers in simple and natural order, and with an elocution, forcible, brilliant, and varied, while at the same time he possessed the happy and rare art of accommodating his instructions to the precise degree of knowledge attained by those whom he instructed. In private, his converse was characterised by ease and familiarity, and he regarded his pupils with the kind interest of a parent.

At this time medicine had barely emerged from the hands of the alchemists and astrologers, and the few truths which the experience of past ages had gathered, lay buried under loads of fanciful jargon and quackery. By reverting to the doctrines of Hippocrates, and taking that ancient Grecian as his model, Boerhaave first shewed a disposition to return to a more natural system, and to simplify the art which he studied. As his powers of mind became matured, and his opportunities of observation extended, he laid down a system far superior to any that had before appeared. That this was by no means perfect, the improvements made by Cullen were sufficient to shew ; at the same time, Cullen and every other of his successors have admitted Boerhaave's merits, and walked closely in his footsteps. His *Institutions* and *Aphorisms* are his chief general works on the science of medicine, though there are numerous essays, besides, from his pen on particular branches and diseases. On chemistry and botany, he gave to the world several treatises, of which the best eulogium that can be given is, that they prepared the way for improvements in these sciences, equally important as those introduced by him into medicine.

Boerhaave's life was spent between his professional

pursuits at Leyden and a country-house at a short distance from that city. He married in 1710, and had four children, one of whom only, a daughter, survived him. Tranquilly as his days were spent in his native land, other countries honoured and appreciated him. He was made a member of the Academy of Sciences of Paris, and of the Royal Society of London. Perhaps a higher evidence of the extent of his fame than either of these honours, was his reception of a letter from a Chinese mandarin desirous of his advice, and directed thus: 'To the illustrious Boerhaave, physician in Europe.'

After suffering much from illness, Boerhaave was compelled to relax his labours, by the resignation of two of his chairs, in 1726. He survived twelve years after this, but was at last cut off by dropsy, in the seventieth year of his age. His decease took place on the 23d of September 1738.

While this true benefactor of his race was thus passing from the stage, others were appearing to tread in the path which he may be justly said to have opened up. ALBERT HALLER, the son of a citizen and advocate of Bern, in Switzerland, was born in October 1708. He was one of those rare examples of extreme precocity of talent by which the world is sometimes astonished. At the age of four, he expounded passages in the Scriptures, on festival days, to his father's domestics; at eight, he had extracted from the Biographical Dictionaries of Moreri and Bayle above two thousand lives; at ten, he compiled, for his own use, Hebrew and Greek vocabularies, and Chaldaic and Hebrew grammars; and at fifteen, he had not only composed several dramatic pieces, but had completed an epic poem, after the manner of Virgil, containing four thousand verses.

Whatever may be thought of the subjects to which the remarkable powers of Haller were devoted (his own mature opinion may be gathered from his burning the papers), the industry evinced in these exertions cannot be too highly commended. Like Boerhaave, he was under domestic tuition till the age of fourteen, when he was placed at the public school of Bern. After staying two years here, he was sent, in the year 1723, to study philosophy under the care of a physician at Bienne. Here, probably, he was imbued with a love of the medical science, for, in the close of the same year, he went to the University of Tübingen, and commenced his studies under the anatomist Duvernoy. Haller's first public exhibition of talent here was the refutation of an anatomical error committed by a Berlin physician of repute, who had announced a discovery of a new salivary canal. This was no ordinary feat for a boy of sixteen.

The reputation of Boerhaave attracted the young student to Leyden in 1725, where he speedily gained the professor's warmest friendship. Here he entered ardently upon anatomical studies, under the celebrated Albinus, and indulged his love of botany in the university gardens, then the richest in Europe. In 1727, he returned to Tübingen, and took the degree of Doctor. Being in easy circumstances, he went, for further improvement, to England, where he formed lasting friendships with Sir Hans Sloane, Cheselden, Douglas, Pringle, and other eminent men of that country. His next visit was to Paris, where he availed himself so plentifully, even in private, of the facilities afforded for dissection, that his residence was complained of as a nuisance, and the truth being discovered, he was glad to make a speedy retreat.

Returning to Bern, he was appointed to the charge of the public library, and in this situation he continued from 1728 till 1736. To occupy his time fully, he prevailed upon the Swiss government to construct for him an anatomical theatre, in which he gave public instructions in his science. Each summer, too, during this period, Haller visited the Alps, in order to collect materials for his great work on the botany of Switzerland. In addition to all these labours, he devoted many of his hours to the cultivation of his poetical talents. His poem on the Alps, issued at this period, attracted the admiration of the German critics, and the author is still regarded as one of the first who gave sublimity, richness, and harmony, to the poetical language of Germany. The only scientific writings which he published at Bern were some detached pieces in anatomy and botany, which gained, however, so much fame, that George II. in 1736, having founded the University of Göttingen, honoured Haller with the offer of the joint-chair of anatomy, surgery, and botany. It was immediately accepted, as it presented to him an influential position, from which he might issue to the world the stores of varied knowledge which he had acquired. His entrance into Göttingen was marked by misfortune. His wife, an amiable lady, to whom he had been but a short time united, was overturned in a carriage at the gates of the town, and died soon after. The new professor plunged into his duties as the best remedy for his affliction, and was speedily surrounded by admiring pupils. At his instigation, the university was enriched with a botanical garden and medical theatres, and the Göttingen Academy of Sciences was founded, of which he was appointed perpetual president.

It is impossible to give any adequate idea of the value of Haller's lectures and writings to medical science during his residence at Göttingen, the celebrity of which school was chiefly owing to him. He contributed above 1500 papers to the *Academical Transactions*, all of them distinguished for new, striking, and comprehensive views. He published his work on the Botany of his native land, his *First Lines of Physiology* (a science in which he has yet had no equal, much less a rival), besides several smaller works, and editions of the works of Boerhaave. His opinions were everywhere adopted by the profession, and Oxford, Leyden, and Berlin strove each to attract the distinguished author. Foreign bodies showered merited honours upon him, and the Emperor Francis made him a Baron, at the request of the British king.

Though Baron Haller would not leave Göttingen for another foreign university, he was seized with a longing for his native soil, and in 1753 he returned permanently to Bern, where his fellow-countrymen received him with pride. He brought with him a German lady, his third wife, with whom he enjoyed much domestic happiness. Haller now entered, for the first time, into politics, being elected a member of the Sovereign Council. Though this led him to engage, as he did with his wonted ability, in political writings, he did not neglect his professional pursuits. He issued at this time several works on pathology, and in 1757 gave to the world his great work on *Physiology*, which is the text-book of the science till this hour. His *Bibliothecæ*, in ten volumes, were published some time after his *Physiology*.

Haller's life was now of great service to his country. His chemical knowledge was employed to improve the

salt-works of Switzerland and other similar establishments. In every public affair of importance, whether foreign or domestic, he bore a leading and useful share. It is curious, that to prove the superiority of republicanism, he wrote no less than three romances, of a political cast. His *Letters to his Daughter on Christianity* were intended as an answer to a Freethinker who had endeavoured to support materialism by a reference to the Baron's *Physiology*. The letters evince much sincere and rational piety.

In the latter part of his career, this eminent man suffered from the attacks of a painful disease. When the final hour came, he exhibited a calmness and presence of mind which has never perhaps been paralleled. With his finger on his wrist, he said to his physician: 'My friend, I am dying—the artery has ceased to beat!' and immediately expired. This event took place on the 12th December 1777, in the seventieth year of his age.

Contemporary with Haller was WILLIAM CULLEN, a man second in merit and reputation neither to Boerhaave nor to the professor of Göttingen. Cullen was a native of Scotland, being born in the parish of Hamilton, county of Lanark, on the 15th of April 1710, a year and a half after the birth of Haller. Having received the elements of knowledge at the grammar-school of his native parish, he was sent to the University of Glasgow, where he distinguished himself by a close application to his studies. Having early evinced a bias to the medical profession, he was apprenticed, during his attendance upon the classes at Glasgow, to Mr John Paisley, a surgeon in extensive practice in that city. Under this gentleman's care, Cullen laid the foundation of that profound knowledge of his science which afterwards distinguished him.

On the termination of his university career, in the year 1729, Dr Cullen went to London, and, through the interest of Commissioner Cleland, a friend of Pope, was appointed surgeon of a merchant-vessel trading to the West Indies. Previous to his nomination to this post, he underwent an examination, in which he acquitted himself so satisfactorily as to elicit the highest encomiums from his interrogators. During the voyage which followed, the young physician was not idle, as the allusions in his lectures, long afterwards, to tropical diseases amply testify. Being the second of nine children, and his father first, and subsequently his elder brother, having died, he was constrained to take upon him the duty of superintending and supporting the family. For this purpose he went to his native country, and established himself in the practice of his profession in the parish of Shotts, near Hamilton. During his two years' residence here, he was an indefatigable student, every hour not necessarily demanded by his business being devoted to books. Still he was unsatisfied with his own proficiency; and on receiving a legacy, which rendered his circumstances easier, he spent some time first in secluded study at Rothbury, and then went to Edinburgh, where he passed three years under the tuition of the first Monro, Rutherford, and other eminent teachers. These were all pupils of the great Boerhaave, and through them Cullen saw the master's doctrines fully displayed. But his clear mind, while it recognised the merits of the Leyden professor's system, already saw of how many improvements it was capable.

Having made many friendships with the eminent and rising men of the profession, Cullen returned in 1736 to Lanarkshire, and commenced practice in Hamilton.

Here he was very successful, the Duke of Hamilton being one of his patrons and friends. Disliking the surgical part of his profession, he assumed a partner qualified to undertake that department; and it is remarkable that this individual, Dr William Hunter, afterwards attained a celebrity scarcely inferior to that of Cullen, who continued to practise in Hamilton till 1744, when he removed to Glasgow. There, in 1751, he was appointed to the chair of medicine in the university. This position not coming up to his expectations, he relinquished it on being elected Professor of Chemistry in the University of Edinburgh in 1756. Chemistry, however, was shortly resigned for practical medicine. By successive steps, he passed through the chairs of materia medica and theory of medicine, until he ultimately settled, with universal applause, as sole professor of the practice of physic, at the death of Dr Gregory, in 1773. He now gave to the world his long-matured system, in his *Nosology* and *Practice of Physic*. The sensation created by these works at the time can scarcely be conceived, and as little can their permanent influence on the treatment of disease and the well-being of mankind be estimated. It would be out of place here to enter into any detailed account of the improvements made by Cullen on the systems of his predecessors, and particularly on that of Boerhaave. One general remark only may be made, that the celebrated professor of Edinburgh was the first to point out clearly the great influence of the nervous system in exciting and modifying disease, and may thus be termed the founder of one of the most important branches of medical knowledge and practice. Nor must it be thought that this was his only great improvement upon previous systems; his reformati-

upon other points of paramount interest were many and permanent. Regarding his works on the *Practice of Physic* as a whole, though many of the opinions contained in them have been objected to, it is not going too far to say, that Cullen is the chief guide to the profession, at this hour, in the discrimination and cure of every complaint that attacks the human race. Since his time, many improvements have taken place in medicine and physiology, but to Cullen, and his predecessors, Boerhaave and Haller, the world is indebted for the sound and rational basis on which these improvements are founded.

Till within a few months of his death, Cullen continued to hold his chair, and to teach by speech and pen his great doctrines. As a teacher, he was, like Boerhaave, the friend of his pupils, and as a member of society he was beloved in private and honoured in public. During the whole of his career as a professor, the citizens of the Scottish metropolis enjoyed the inestimable advantage of his services as a medical adviser. In this capacity, he combined the skill of a profound master of his art with sound common-sense and kindness of disposition. How deeply his value was appreciated by all, was evinced in a manner the most gratifying to him. On his resigning his chair, when attacked by his last illness, addresses were presented to him, both from home and abroad; and the magistrates of the city he had adorned presented him with a piece of plate, in token of their high esteem.

His death took place on the 5th of February 1790, at the advanced age of eighty.

CAPTAIN COOK.

THIS distinguished individual was born at the village of Marton, not far from Whitby, a seaport on the coast of Yorkshire, on the 27th of October 1728. His parents were of a very humble rank in society : his father, who was a farmer's servant, married a woman in the same sphere of life with himself ; and both were noted for their honesty, sobriety, and industry—qualities that descended to their son James. Young Cook received the first rudiments of his education at Marton, where he was taught to read by the schoolmistress of the village. When he was eight years of age, his father, in consequence of his good character, obtained the situation of bailiff, or superintendent of a farm, to Thomas Scottowe, Esq. near Great Ayton, whither the family removed ; and, at that gentleman's expense, James was put under the tuition of a schoolmaster, who instructed him in writing and the first principles of arithmetic and book-keeping. At this period he is said to have shewn a strong genius for figures, and to have made himself remarkable for the reservedness of his disposition and the inflexibility of his temper. During this time he likewise followed the same servile employment as his father, as much as his tender years would permit, and thus laid the foundation of that hardiness of constitution for which in after-life he was so remarkable, and which may be said to have enabled him to accomplish his adventurous career.

When about sixteen years of age, Cook was bound

apprentice to a shopkeeper at Snaith, a considerable fishing-town about ten miles north of Whitby; but as he now began to evince a strong partiality for a maritime life, fostered no doubt by the situation of the place, after a year and a half's servitude he obtained a release from his engagements, and determined to follow the bent of his genius.

Accordingly, in 1746, he became an apprentice for three years with Messrs Walker of Whitby, owners of the ship *Freelove*, a vessel constantly employed in the coal-trade, on board which our navigator spent the greater part of his apprenticeship. After serving the full time, to the entire satisfaction of his employers, he performed some voyages to the Baltic, in the capacity of a common sailor, till at length his masters, who had penetration to discover his talents and worth, appointed him mate, and afterwards master, of one of their ships. In this employment he continued till the commencement of hostilities between Great Britain and France in 1755, when, being in the river Thames with his vessel, and finding that press-warrants were issued, he felt a spirit that disdained to be *compelled* to serve his king, and he adopted the resolution of entering the royal navy as a volunteer; 'having a mind,' as he expressed himself, 'to try his fortune in that way.'

Cook entered on board the *Eagle*, of sixty guns, commanded by Captain, afterwards Sir Hugh Palliser; and that judicious officer soon perceived the merit of this excellent seaman, and granted him every encouragement compatible with the humble station which he occupied. His friends and relatives in his native country, likewise, finding his conduct deserving their patronage, generously interfered in his behalf; and through the influence

of Mr Osbaldeston, M.P. for Scarborough, with the assistance of Captain Palliser, they at length procured him a master's warrant in the *Mercury*, and in her he soon after sailed to North America, where she joined the fleet under Sir Charles Saunders, in the memorable expedition against Quebec. It was on this occasion that the talents of Cook were first brought into notice. During the siege, a difficult and dangerous service was to be performed. This was to take the soundings of the river St Lawrence, between the isle of Orleans and the north shore, directly in front of the French fortified camp at Montmorency and Beauport, in order to enable the admiral to place ships against the enemy's batteries, and to cover the army in the grand attack which General Wolfe intended to make on the camp. Captain Palliser, in consequence of his acquaintance with Cook's skill and resolution, recommended him to the service, and he performed it in the most complete manner.

After the reduction of Quebec, Cook was appointed by Lord Colville, on the 22d of September 1759, master of the *Northumberland*, in which ship his lordship remained the following winter, as commodore, at Halifax. During the leisure which the winter season afforded him, he employed his time in the acquisition of such knowledge as eminently qualified him for his future appointments. It was at Halifax that he first read Euclid, the father of mathematics, and applied himself to the study of astronomy and other higher branches of nautical science. The assistance which he derived from books was but scanty ; but his industry enabled him to supply many wants, and to make a progress far superior to what could have been expected from the few advantages he enjoyed.

In April 1760, he received a lieutenant's commission, and he continued during two years to apply himself diligently to acquire a knowledge of the North American coast, and to facilitate its navigation. His abilities as an accurate draughtsman were now so well known that he was employed by different commanders, particularly Lord Graves, to make charts and surveys; and the unanimous voice of the best judges confirms his merit in this respect.

Towards the close of 1762, he returned to England, and married a young lady of the name of Batts, whom he tenderly loved, and who had every claim to his warmest affection and esteem. It is a singular circumstance, if it be true as reported, that he was godfather to his future wife, and, at the very time she was christened, declared that he had determined on the union which afterwards took place between them.

Early in the year 1763, after the restoration of peace, he was appointed marine-surveyor of Newfoundland, at the recommendation of his steady friend and patron, Captain, afterwards Lord Graves, who went out again as governor. This appointment he continued to fill, under successive governors, till the close of the year 1767; and he had here an opportunity of exhibiting to the Royal Society a proof of the great progress which he had made in the study of astronomy. This he did in 1766, by making an observation of an eclipse of the sun at the island of Newfoundland, with the longitude deduced from it, which was published in the fifty-seventh volume of the *Philosophical Transactions*; and he now acquired reputation for his scientific, as he had formerly for his professional skill.

We come now to that period of Cook's life when he

was to be known to the world as one of the most illustrious navigators that any age or nation has produced. It having been calculated by astronomers that a transit of the planet Venus over the sun's disc would happen in 1769, and that the best place for observing it would be in some part of the South Seas, the Royal Society addressed a memorial to His Majesty on the subject, entreating that a vessel might be ordered at the expense of government, for the conveyance of suitable persons to make the observations. To this memorial a favourable answer was returned, and the *Endeavour*, a vessel of three hundred and seventy tons, was purchased into the service for the voyage. Some difficulties occurred in the appointment of a commander ; but at length Mr Stephens, Secretary to the Admiralty, mentioned Lieutenant Cook as a person whom he judged to be fully qualified for the direction of the voyage, and, at the same time, recommended it to the board to take the opinion of Sir Hugh Palliser, who had lately been governor of Newfoundland, and was intimately acquainted with the merit of Cook. Sir Hugh rejoiced in the opportunity of serving his friend, and, through the strength of his recommendation, it was determined that Cook should have the command of the expedition. He was appointed joint-astronomer with Mr Charles Green, a gentleman who had long been assistant to Dr Bradley, at the Royal Observatory at Greenwich ; and he was also accompanied by Mr, afterwards Sir Joseph Banks, president of the Royal Society, and by Dr Solander, a Swedish gentleman, who had made much proficiency in every branch of natural history, under the instructions of the celebrated Linnæus. With the rank of captain, he sailed down the river Thames,

on the 30th of July 1768; and, on the 26th of August following, he sailed from Plymouth Sound, on an expedition the most honourable to his country.

On the 13th of November, Captain Cook arrived at Rio de Janeiro, in South America; and proceeding thence, after touching at Port Maurice, in the Strait of Le Maire, on the 13th of April 1769, he anchored in Matavia Bay, in the island of Otaheite.

In the course of this voyage, Captain Cook visited the Society Islands; determined the insularity of New Zealand; sailed through the strait which separates these two islands, now called after his name; and made a complete survey of both. He afterwards explored the eastern coast of New Holland, hitherto unknown; and thus added an extent of more than two thousand miles to our geographical knowledge of the globe. On the 12th of June 1771, he came to an anchor in the Downs, after having been absent almost three years, in which time he had experienced every danger to which a voyage of such length is incident, displaying on all occasions a mind equal to the most perilous enterprises, and to the boldest and most daring efforts of navigation and discovery.

Shortly after Captain Cook's return to England, it was resolved to equip two ships to complete the discovery of the southern hemisphere. It had long been a prevailing idea that the unexplored part contained another continent, and many plausible philosophical arguments had been urged in support of this opinion. To ascertain this point was the important object of Captain Cook's second voyage. That nothing might be omitted which could tend to facilitate the enterprise, two ships were provided, equipped with uncommon care, and furnished

with every necessary that could contribute to the safety, health, and comfort of the navigators. The first of these ships, commanded by Captain Cook, was called the *Resolution*, a vessel of four hundred and sixty-two tons burden; the other the *Adventure*, of three hundred and thirty-six tons, was commanded by Captain Tobias Furneaux.

He sailed from England on the 13th of July 1772; on the 25th of January 1774, arrived within the southern frozen zone; and, on the 30th of January, he reached the latitude of $71^{\circ} 10'$ south; but all attempts to penetrate farther to the southward being found absolutely impracticable, he was obliged to relinquish the attempt.

Cook returned to England from this his second voyage, in July 1775, and was received with marked honours. He might now have retired from all future toil; but he was reserved for yet far greater exertions, and doomed, through savage barbarity, to lose a life of the greatest value to society. For a number of years it had been a favourite scheme with navigators to discover a shorter and more commodious passage to the East Indies than by the Cape of Good Hope. Cook's mind was excited by the magnitude of such a design, and the consequences likely to result from it. Under a noble enthusiasm, he offered his services in the conducting of the expedition: no proposal could have been more grateful, and he was invested with the command. The vessels destined for this service were the *Resolution* and the *Discovery*—the former being given to Cook, the latter to Captain Clerke. The instructions were to seek out a path from the Pacific to the Atlantic, by way of the clusters of islands Cook had before visited within the southern tropic. The ships left the English Channel

in July 1776. The particulars of this interesting voyage our readers are most likely already acquainted with. It will be remembered that Cook proceeded by way of the Cape of Good Hope, Tasmania, New Zealand, the Friendly and Society Islands, and thence northwards along the west coast of America, till he was prevented from sailing round the northern extremity of Asia by the approach of winter. He now returned southwards to the Sandwich Islands, in the Pacific, with the intention to remain till summer. But here his enterprise was arrested. When at the island of Owyhee, or Hawaii, a quarrel arose between the natives and the ships' crews, which led to a sort of skirmish or hurried fight. In endeavouring to quell the disturbance, when on shore, he was stabbed in the back, and fell with his face into the water. This melancholy event occurred on the 14th of February 1779. The intelligence was received, not only in Britain, but throughout Europe, with general lamentation, and various honours were justly paid to his memory, both by public bodies and private individuals.

BENJAMIN FRANKLIN.

BENJAMIN FRANKLIN was born at Boston, in New England, North America, on the 17th of January 1706, and was the youngest but two of a family of seventeen children, two daughters being born after him. His ancestors, as far as they can be traced back (at least three hundred years), were petty freeholders at Eaton, in Northamptonshire; but if we may judge by the surname of the family—the ancient Saxon appellation

for a country gentleman—we may conclude they had originally been of some consequence. After the Reformation, the immediate progenitors of Benjamin continued zealously attached to the Church of England, till towards the close of the reign of Charles II. when his father Josias, along with his uncle Benjamin, became dissenters. These men were both bred to the trade of silk-dyeing. Josias married early in life ; and about the year 1682, he emigrated, with his wife and three children, to America, on account of the persecutions to which he was exposed for his dissenting principles. On arriving in New England, he embraced the occupations of soap-boiler and tallow-chandler, of which businesses he previously knew nothing, but only from their being at the time the likeliest to provide maintenance for his increasing family. He appears to have been a man of great penetration and solid judgment—prudent, active, and frugal ; and although kept in comparative poverty by the expenses of his numerous family, was held in great esteem by his townsmen.

In no respect was his practical good sense more conspicuous than in the education of his children ; and his illustrious son frequently alludes, in terms of thankfulness and gratitude, to the many exemplary precepts and sound moral lessons he received while under the paternal roof. The following passage may be read with no little instruction by the heads and members of all families similarly circumstanced : ‘ He was fond of having at his table, as often as possible, some friends, or well-informed neighbours, capable of rational conversation ; and he was always careful to introduce useful or ingenious topics of discourse, which might tend to form the minds of his children. By this means, he early attracted our

attention to what was just, prudent, and beneficial in the conduct of life. He never talked of the meats which appeared on the table ; never discussed whether they were well or ill dressed, of a good or bad flavour, high seasoned or otherwise, preferable or inferior to this or that dish of a similar kind. Thus accustomed, from my infancy, to the utmost inattention as to these objects, I have since been perfectly regardless of what kind of food was before me ; and I pay so little attention to it even now, that it would be a hard matter for me to recollect, a few hours after I had dined, of what my dinner had consisted. When travelling, I have particularly experienced the benefit of this habit ; for it has often happened to me to be in company with persons, who, having a more delicate because a more exercised taste, have suffered in many cases considerable inconvenience, while as to myself I have had nothing to desire.'

Benjamin was at first designed to be a clergyman, and at eight years of age was put to the grammar-school with that view, having previously been taught to read. His uncle Benjamin, who had likewise emigrated, encouraged this project. But young Franklin had not been a year at school when his father perceived that his circumstances were quite inadequate to the expenses necessary to complete his son's education for the clerical profession. He accordingly removed him from the more learned seminary, and placed him under a humble teacher of reading and writing for another twelvemonth, preparatory to binding him to some handicraft trade.

When his term at school was expired, being then ten years of age, he was taken home to assist his father in his business ; but he soon testified such repugnance to the cutting of wicks for candles, running errands, waiting

in the shop, with other drudgery of the same nature, that, after a tedious and ill-borne trial of two years, his father became afraid of his running off to sea (for which he confesses to have had a predilection), as an elder brother had done, and resolved to put him to some other occupation. After much deliberation, therefore, he was sent on trial for a few days to his cousin (a son of Benjamin), who was a cutler ; but that relative being desirous of a larger apprentice-fee than his uncle could spare, he was recalled. His brother James, a short time previous to this period, had returned from England, whither he had been sent to learn the printing business, and set up a press and types on his own account at Boston. To him, therefore, after no little persuasion, Benjamin at last agreed to become apprentice, and he was indentured accordingly for the term of nine years ; that is, until he should reach the age of twenty-one.

The choice of this profession, as it turned out, was a lucky one, and it was made after much careful and correct observation on the part of the parent. He had watched his son's increasing fondness for books and thirst for information, and that, too, of a solid and instructive sort ; and he therefore judiciously resolved to place him in a favourable situation for gratifying this propensity in the youthful mind ; while he would at the same time be instructed in a profession by which he could always independently maintain himself, wherever almost his fortunes might lead him, within the bounds of the civilised world. Franklin thus speaks of his early and insatiable craving after knowledge :

‘ From my earliest years I had been passionately fond of reading, and I laid out in books all the money I could procure. I was particularly pleased with accounts of

voyages. My first acquisition was Bunyan's collection, in small separate volumes. These I afterwards sold, in order to buy an historical collection by R. Burton, which consisted of small cheap volumes, amounting in all to about forty or fifty. My father's little library was principally made up of books of practical and polemical theology. I read the greatest part of them. There was also among my father's books, Plutarch's *Lives*, in which I read continually, and I still regard as advantageously employed the time devoted to them. I found, besides, a work of Defoe's, entitled *An Essay on Projects*, from which, perhaps, I derived impressions that have since influenced some of the principal events of my life.'

By his assiduity Franklin soon attained great proficiency in his business, and became very serviceable to his brother. At the same time, he formed acquaintance with various booksellers' apprentices, by whose furtive assistance he was enabled to extend the sphere of his reading. This gratification, however, was for the most part enjoyed at the expense of his natural rest. 'How often,' says he, 'has it happened to me to pass the greater part of the night in reading by my bedside, when the book had been lent me in the evening, and was to be returned the next morning, lest it might be missed or wanted !' His studious habits and intelligent conversation also attracted the notice of a wealthy merchant, who was in the habit of coming about the office, who invited him to his house, and gave him the use of an excellent library.

It is a singular peculiarity of all minds of an active and aspiring character, that they uniformly endeavour to do what others have done, and from which they themselves

have derived enjoyment or benefit. Franklin, from the delight he took in the perusal of books, at last bethought him of trying his own hand at composition ; and, as has happened, we believe, with a great proportion of literary men of all ages, his first efforts were of a poetical nature. His brother having come to the knowledge of his attempts, encouraged him to proceed, thinking such a talent might prove useful in the establishment. At the suggestion of the latter, therefore, he finished two ballads, which, after being printed, he was sent round the town to sell ; and one of them, the subject of which was a recent affecting shipwreck, had, he says, a prodigious run. But his father having heard of the circumstance, soon let down the pegs of the young poet's vanity, by analysing his verses before him in a most unmerciful style, and demonstrating, as Franklin says, what 'wretched stuff they really were.' This sharp lesson, which concluded with a warning that versifiers were almost uniformly beggars, effectually weaned him from his rhyming propensities.

Franklin immediately afterwards betook himself to the composition of prose, and the first opportunity of exercising his pen and his faculties in this way occurred in the following manner : He had a young acquaintance of the name of Collins, who was, like himself, passionately fond of books, and with whom he had frequent and long arguments on various subjects. In narrating this circumstance, he comments, in passing, on the dangerous consequences of acquiring a disputatious habit, as tending to generate acrimony and discord in society, and often hatred between the best of friends. Franklin and his companion having, as usual, got into an argument one day, which was maintained on both sides with equal

pertinacity, they parted without bringing it to a termination; and as they were to be separated for some time, an agreement was made that they should carry on their dispute by letter. This was accordingly done; when, after the interchange of several epistles, the whole correspondence happened to fall into the hands of Franklin's father. After perusing it with much interest, his natural acuteness and good sense enabled him to point out to his son how inferior he was to his adversary in elegance of expression, arrangement, and perspicuity. Feeling the justice of his parent's remarks, he forthwith studied most anxiously to improve his style; and the plan he adopted for this purpose is equally interesting and instructive.

'Amidst these resolves,' he says, 'an odd volume of the *Spectator* fell into my hands. This was a publication I had never seen. I bought the volume, and read it again and again. I was enchanted with it, thought the style excellent, and wished it were in my power to imitate it. With this view I selected some of the papers, made short summaries of the sense of each period, and put them for a few days aside. I then, without looking at the book, endeavoured to restore the essays to their due form, and to express each thought at length, as it was in the original, employing the most appropriate words that occurred to my mind. I afterwards compared *my Spectator* with the original. I perceived some faults, which I corrected; but I found that I chiefly wanted a fund of words, if I may so express myself, and a facility of recollecting and employing them, which I thought I should by that time have acquired, had I continued to make verses. The continual need of words of the same meaning, but of different lengths for the measure, and of

different sounds for the rhyme, would have placed me under the necessity of seeking for a variety of synonyms, and have rendered me master of them. From this belief, I took some of the tales of the *Spectator*, and turned them into verse; and, after a time, when I had sufficiently forgotten them, I again converted them into prose. Sometimes, also, I mingled my summaries together; and, a few weeks afterwards, endeavoured to arrange them in the best order, before I attempted to form the periods and complete the essays. This I did, with a view of acquiring method in the arrangement of my thoughts. On comparing afterwards my performance with the original, many faults were apparent, which I corrected; but I had sometimes the satisfaction to think, that, in certain particulars of little importance, I had been fortunate enough to improve the order of the thought or style; and this encouraged me to hope that I should succeed in time in writing decently in the English language, which was one of the greatest objects of my ambition.'

But it was not only by such rigorous self-imposed tasks that this extraordinary man, even at so early an age, endeavoured to chasten his mind, and make every animal propensity subservient to his sense of duty; he also began to exercise a certain degree of restraint on the indulgence of personal enjoyments, though in rather a whimsical manner. Having met with a work recommending a vegetable diet, he determined to adopt it. Finding, after some days' trial, that he was ridiculed by his fellow-boarders for his singularity, he proposed to his brother to take the half of what was now paid by that relative for his board, and therewith to maintain himself. No objection was of course made to such an arrangement,

and he soon found that of what he received he was able to save one-half. 'This,' says he, 'was a new fund for the purchase of books; and other advantages resulted to me from the plan. When my brother and his workmen left the printing-house to go to dinner, I remained behind; and despatching my frugal meal, which frequently consisted of a biscuit only, or a slice of bread and a bunch of raisins, or a bun from the pastry-cook's, with a glass of water, I had the rest of the time till their return for study; and my progress therein was proportioned to that clearness of ideas and quickness of conception which are the fruits of temperance in eating and drinking.'

Another remarkable instance of the resolute way in which he set about making himself master of whatever acquirement he found more immediately necessary to him at the moment, is the following: Having been put to the blush one day for his ignorance in the art of calculation, which he had twice failed to learn while at school, he procured a copy of Cocker's *Arithmetic*, and went through it all, making himself completely master of it, before turning his mind to anything else! He soon after, also, gained some little acquaintance with geometry, by perusing a work on navigation. He mentions, likewise, his reading about this time Locke's *Essay on the Understanding*, and the *Art of Thinking*, by Messrs du Port Royal. Having found, in some essay on rhetoric and logic, a model of disputation after the manner of Socrates, which consists in drawing on your opponent, by insidious questions, into making admissions which militate against himself, he became excessively fond of it, he says, and practised it for some years with great success, but ultimately abandoned it, perceiving

that it could be made as available to the cause of wrong as that of right, while the prime end of all argument was to convince or inform.

About three years after Franklin went to his apprenticeship, that is to say, in 1721, his brother began to print a newspaper, the second that was established in America, which he called the *New England Courant*; the one previously established was the *Boston Newsletter*. The new publication brought the most of the literati of Boston about the printing-office, many of whom were contributors; and Franklin frequently overheard them conversing about the various articles that appeared in its columns, and the approbation with which particular ones were received. He became ambitious to participate in this sort of fame; and having written out a paper in a disguised hand, he slipped it under the door of the printing-office, where it was found next morning, and submitted, as usual, to the critics when they assembled. 'They read it,' he says; 'commented on it in my hearing; and I had the exquisite pleasure to find that it met with their approbation; and that, in the various conjectures they made respecting the author, no one was mentioned who did not enjoy a high reputation in the country for talent and genius. I now supposed myself fortunate in my judges, and began to suspect that they were not such excellent writers as I had hitherto supposed them. Be this as it may, encouraged by this little adventure, I wrote and sent to press, in the same way, many other pieces, which were equally approved—keeping the secret till my slender stock of information and knowledge for such performances was pretty completely exhausted.' He then discovered himself, and had the satisfaction of finding he was treated

with much more respect by his brother and his friends than heretofore.

The two brothers, however, lived together on very disagreeable terms, in consequence of the hasty and overbearing temper of the elder, and Benjamin anxiously longed for an opportunity of separating from him. This at last occurred. His brother was apprehended and imprisoned for some political article which offended the local government, and upon his liberation, was prohibited from ever printing his newspaper again. It was therefore determined that it should be published in Benjamin's name, who had managed it during his brother's confinement with great spirit and ability. To avoid having it said that the elder brother was only screening himself behind one of his apprentices, Benjamin's indenture was delivered up to him discharged, and private indentures entered into for the remainder of his time. This underhand arrangement was proceeded in for several months, the paper continuing to be printed in Benjamin's name ; but his brother having one day again broke out into one of his violent fits of passion, and struck him, he availed himself of his discharged indentures, well knowing that the others would never be produced against him, and gave up his employment. Franklin afterwards regretted his having taken so unfair an advantage of his brother's situation, and regarded it as one of the first *errata* of his life. His brother felt so exasperated on the occasion, that he went round all the printing-houses, and represented Benjamin in such a light that they all refused his services.

Finding he could get no employment at Boston, as well as that he was regarded with dislike by the government, he resolved to proceed to New York, the nearest

town in which there was a printing-office. To raise sufficient funds for this purpose, he sold part of his library; and having eluded the vigilance of his parents, who were opposed to his intention, he secretly got on board of a vessel, and landed at New York on the third day after sailing.

Thus, at the age of seventeen, Franklin found himself three hundred miles from his native place, from which he was in some sort a runaway, without a friend or recommendation to any one, and with very little money in his pocket. To complete his dilemma, he found, on applying, that the only printer then in the town could give him no employment. That person, however, recommended him to go to Philadelphia, where he had a son, who, he thought, would give him work; and he accordingly set off for that place. His journey was a most disastrous one both by water and land, and he frequently regretted leaving home so rashly. He reached his destination at last, however, and in a plight which certainly did not bode over-auspiciously for his future fortunes. His own graphic description of his condition and appearance, on his first entrance into Philadelphia, is at once interesting and amusing:

‘I have entered into the particulars of my voyage, and shall in like manner describe my first entrance into this place, that you may be able to compare beginnings so unlikely with the figure I have since made. I was in my working dress, my best clothes being to come by sea. I was covered with dirt; my pockets were filled with shirts and stockings; I was unacquainted with a single soul in the place, and knew not where to seek a lodging. Fatigued with walking, rowing, and having passed the night without sleep, I was extremely hungry,

and all my money consisted of a Dutch dollar, and about a shilling in copper, which I gave to the boatmen for my passage. At first they refused it, because I had rowed, but I insisted on them taking it. A man is sometimes more generous when he has little than when he has much money, probably because he is, in the first place, desirous of concealing his poverty.

‘I walked towards the top of the street, looking eagerly on both sides, till I came to Market Street, where I met a child with a loaf of bread. I inquired where he had bought it, and went straight to the baker’s shop which he pointed out to me. I asked for some biscuits, expecting to find such as we had at Boston ; but they made, it seems, none of that sort at Philadelphia. I then asked for a threepenny loaf ; they made no loaves of that price. I then desired him to let me have threepence-worth of bread, of some kind or other. He gave me three large rolls. I was surprised at receiving so much. I took them, however, and having no room in my pockets, I walked on, with a roll under each arm, eating the third. In this manner I went through Market Street to Fourth Street, and passed the house of Mr Read, the father of my future wife. She was standing at the door, observed me, and thought, with reason, that I made a very singular and grotesque appearance. I then turned the corner, and went through Chestnut Street, eating my roll all the way ; and having made this round, I found myself again on Market Street wharf, near the boat in which I arrived. I stepped into it to take a draught of the river-water ; and finding myself satisfied with my first roll, I gave the other two to a woman and her child who had come down the river with us in the boat, and was waiting to

continue her journey. Thus refreshed, I regained the street, which was now full of well-dressed people all going the same way. I joined them, and was thus led to a Quakers' meeting-house, near the market-place. I sat down with the rest, and, after looking round me for some time, hearing nothing said, and being drowsy from my last night's labour and want of rest, I fell into a sound sleep. In this state I continued till the assembly dispersed, when one of the congregation had the goodness to wake me. This was consequently the first house I entered, or in which I slept, in Philadelphia.'

Having with some difficulty procured a lodging for the night, he next morning waited on Mr Bradford, the printer to whom he had been directed. That individual said he had no work for him at present, but directed him to a brother in trade of the name of Keimer, who, upon application, made him the same answer; but, after considering a little, set him to put an old press to rights, being the only one indeed he possessed; and in a few days gave him regular work. Upon this, Franklin took a lodging in the house of Mr Read, his future father-in-law.

Franklin had been some months at Philadelphia, without either writing to or hearing from home, and, as he says, trying to forget Boston as much as possible, when a brother-in-law of his, a master of a vessel, having accidentally heard where he was, wrote to him, pressing his return home in the most urgent terms. Franklin's reply, declining compliance with the request, happened to reach his brother-in-law when the latter was in the company of Sir William Keith, governor of the province, and the composition and penmanship struck him as so much superior to the ordinary style of letter-writing, that

he shewed it to His Excellency. The governor was no less pleased with it, and expressed the utmost surprise when told the age of the writer. He observed, that he must be a young man of promising talents, and said that if he would set up business on his own account at Philadelphia, he would procure him the printing of all the public papers, and do him every other service in his power. Franklin heard nothing of this from his brother-in-law at the time ; but one day, while he and Keimer were at work in the office, they observed through the window the governor and another gentleman (who proved to be Colonel French of Newcastle, in the province of Delaware), finely dressed, cross the street, and come directly for the office, where they knocked at the door. Keimer ran down, in high expectation of this being a visit to himself ; ‘but the governor,’ says Franklin, ‘inquired for me, came up-stairs, and, with a politeness to which I had not at all been accustomed, paid me many compliments, desired to be acquainted with me, obligingly reproached me for not having made myself known to him on my arrival in town, and wished me to accompany him to a tavern, where he and Colonel French were going to taste some excellent Madeira wine ! I was, I confess, somewhat surprised, and Keimer was thunderstruck. I went, however, with the governor and Colonel French to a tavern at the corner of Third Street, where, while we were drinking the Madeira, he proposed to me to establish a printing-house. He set forth the probabilities of success, and himself and Colonel French assured me that I should have their protection and influence in obtaining the printing of the public papers for both governments ; and as I appeared to doubt whether my father would assist

me in this enterprise, Sir William said that he would give me a letter to him, in which he would recommend the advantages of the scheme in a light which he had no doubt would determine him to agree to do so. It was thus concluded that I should return to Boston by the first vessel, with the letter of recommendation from the governor to my father. Meanwhile, the project was to be kept secret, and I continued to work to Keimer as before. The governor subsequently sent for me every now and then to dine with him. I considered this as a very great honour ; and I was the more sensible of it, as he conversed with me in the most affable, friendly, and familiar manner imaginable.'

In pursuance of the above arrangement, Franklin set out on his return homewards, in the end of April 1724, having been absent seven months, during which time his parents and relations had heard nothing of him whatever, his brother-in-law never having written to inform them where he was. All the family, with the exception of his brother James, were delighted to see him ; and not the less so, perhaps, that he was apparelled in a complete new suit of clothes, had an excellent silver watch, and about five pounds sterling in his pocket. His father was exceedingly surprised when informed of the object of his visit, and still more at the contents of Governor Keith's epistle. After long deliberation, he came to the resolution of refusing compliance with the request, on account of his son being too young to undertake the management of such a speculation ; adding, that he thought the governor a man of little discretion in proposing it. He promised, however, when his son should attain his twenty-first year, that he would supply him with what money he required to set him up in business, praising

him highly, at the same time, for his industry and good conduct. Franklin, accordingly, was necessitated to return to Philadelphia with the news of his bad success, but left Boston on this occasion accompanied by the blessings of his parents. When he arrived at Philadelphia he immediately waited upon the governor, and communicated the result of his journey. Sir William observed that his father was 'too prudent;' but added, 'since he will not do it, I will do it myself.' It was ultimately arranged, therefore, that Franklin should proceed personally to London to purchase everything necessary for the proposed establishment, for the expense of which the governor promised him a letter of credit to the extent of £100, with recommendations to various people of influence.

It had been arranged that Franklin was to go to England in the regular packet-ship; and, as the time of her sailing drew near, he became importunate for the governor's letters of credit and recommendations, but the latter always put him off under various pretences. At last, when the vessel was on the point of departing, he was sent on board, under the assurance that Colonel French would bring the letters to him immediately. That gentleman accordingly came on board with a packet of despatches tied together, which were put into the captain's bag, and Franklin was informed that those intended for him were tied up with the rest, and would be delivered to him before landing in England. When they arrived in the Thames, accordingly, the captain allowed him to search the bag, but Franklin could find no letters directed either to himself or addressed as to his care; but he selected six or seven, which, from the directions on them, he conceived to be those intended

for his service. One of these was to the king's printer, and Franklin accordingly waited upon that gentleman with it ; but the latter had no sooner opened it than he exclaimed : ' Oh, this is from Riddlesden ! ' [a well-known rascally attorney at Philadelphia] ; ' I have lately discovered him to be an arrant knave, and wish to have nothing to do either with him or his letters.' So saying, he turned on his heel, and resumed his occupation. In short, it turned out that none of the letters were from the governor ; and he soon learned, from a gentleman of the name of Denham, who had been a fellow-passenger with him, and to whom he explained his awkward situation, that the governor was a complete cheat, deceiving people, from vanity and a love of self-consequence, with promises which he neither intended nor was able to fulfil ; and laughed at the idea of a man giving a letter of credit for £100 who had no credit for himself.

Franklin's situation was now even more desolate than when set ashore, ragged, hungry, and almost penniless, at Philadelphia, little more than a twelvemonth before. But the heart, at eighteen, is not naturally inclined to despond, and never was one less so than that of Franklin. He immediately applied for and obtained employment in the office of the celebrated Mr Palmer. Amongst other works on which he was set to work here, was a second edition of Wollaston's *Religion of Nature*. Conceiving some of the positions assumed in it to be weak or erroneous, he composed and published a small metaphysical treatise in refutation of them. This pamphlet acquired him considerable credit with his master as a man of talent ; but that gentleman reprobated, with the utmost abhorrence, the doctrines maintained in his publication, which, truth compels us to

say, were completely irreligious, so far as regarded the Christian faith, or any other acknowledged system of belief. Free-thinking, however, was then in fashion among the higher and more learned classes, and his pamphlet procured him the countenance of various eminent individuals ; amongst the rest, of Dr Mandeville, author of the *Fable of the Bees*, and Dr Pemberton, Sir Isaac Newton's friend. He was likewise waited upon by Sir Hans Sloane, who had been informed of his bringing some curiosities with him from America ; amongst others, a purse of asbestos—a natural substance which resists the action of fire, and then very little known—for which he paid Franklin a high price. From Mr Palmer's office he removed to Mr Watts', for the consideration of a higher wage. Here he gave a striking proof of that resolute adherence to temperance, industry, and frugality, which was one of the leading features of his character. Whilst Mr Watts' other workmen spent generally five or six shillings a week on beer, which was brought into the office to them during the day, he drank nothing but water ; and they were surprised to see that he was much stronger than any of them, while he himself had the additional comfort and satisfaction of being always clear-headed. At first they ridiculed his abstinence, and conferred on him the sobriquet of the *American Aquatic* ; but as his character rose amongst them, his example, he says, 'prevailed with several of them to renounce their abominable practice of bread and cheese with beer ; and they procured, like me, from a neighbouring house, a good basin of warm gruel, in which was a small slice of butter, with toasted bread and nutmeg. This was a much better breakfast, which did not cost more than a pint of beer, namely, three-halfpence, and

at the same time preserved the head clearer.' His assiduous application to business at the same time, together with remarkable quickness in *composing* (setting up the types), recommended him to his employer, and procured him all the most urgent and best-paid work ; so that, with his frugal mode of living, he quickly laid past money.

After having been about eighteen months in London, much to his advantage in every respect—for, besides becoming more proficient in his business, he had stuck to his books as sedulously as ever, even although he frequently went to the play, made little pleasure excursions, and mingled a good deal in society—he was about to set out on a tour through Europe, with a young intelligent fellow-workman (designing to maintain themselves during their pilgrimage by means of their calling), when he accidentally met with Mr Denham, before noticed as being his fellow-passenger from America. That gentleman was on the eve of returning to Philadelphia, to open a merchant's store, and offered Franklin the situation of his clerk, with a salary of £50 per annum. This sum was less than he was making as a compositor ; but an anxious desire to revisit his native country induced him to accept it. They set sail accordingly—Franklin now supposing he had relinquished the composing-stick for ever—and arrived at Philadelphia on the 11th of October 1726. Franklin had just entered his twenty-first year at this time ; and he mentions having drawn up for himself in writing, during the voyage, a plan for the regulation of his future conduct. This interesting document was afterwards unfortunately lost ; but he tells us himself that he pretty faithfully adhered to the rules thus early laid down, even

into old age. Upon his arrival, he found his old acquaintance the governor had been supplanted in his office, and was held in general contempt. They met several times, but no allusion was ever made by Franklin to the disgraceful imposture the other had practised on him.

Franklin's new employer had only been in business for a few months, when both were seized at the same time with a violent disorder, which carried off the master in a few days, and brought the clerk to the brink of the grave. On his recovery, being thus once more left destitute, he was fain to accept employment as a printer from his old master Keimer, who was now somewhat better off in the world, but still utterly ignorant of his profession. The whole charge of the office, with that of instructing four or five ignorant apprentices, devolved on Franklin. 'I also,' says he, 'upon occasion, engraved various ornaments, made ink, gave an eye to the shop—in short, I was in every respect the *factotum*.' But he likewise at this time gave another remarkable instance of his versatile ingenuity.

'Our press,' says he, 'was frequently in want of the necessary quantity of letter, and there was no such trade as that of letter-founder in America. I had seen the practice of this art at the house of James, in London, but had at the time paid it very little attention. I, however, contrived to fabricate a mould. I made use of such letters as we had for punches, founded new letters of lead in matrices of clay; and thus supplied, in a tolerable manner, the wants that were most pressing.' Franklin's inventive mind would seem here to have obtained a distant glimpse of the principle of *stereotyping*, which has since been carried to such a height

of usefulness and perfection, as exemplified in many publications, especially those which appear in a succession of numbers.

Keimer having engaged Franklin solely with the view of having his apprentices so far initiated in the art as that he could dispense with their instructor's services, took the first occasion to quarrel with him when he thought he had sufficiently attained his object. Upon their separation, one of Keimer's apprentices, named Meredith, who, like all the others, had conceived a great veneration for Franklin, proposed that they should enter into partnership together—Meredith's friends undertaking to furnish the capital necessary for purchasing the materials, &c. This offer was too advantageous to be refused; and types, press, &c. were forthwith commissioned from London; but while preparing to put their plan into execution, Franklin was induced, during the interval, to return again to Keimer, at the urgent solicitation of the latter. The motive for this humble entreaty was that individual's having taken a contract for the printing of some paper-money for the state of New Jersey, requiring a variety of new cuts and types, which he knew well nobody in that place but Franklin could supply. This also presents us with a very striking instance of Franklin's remarkable gift of invention.

'To execute the order,' says he, 'I constructed a copperplate printing-press, the first that had been seen in the country. I engraved various ornaments and vignettes for the bills; and we repaired to Burlington together, where I executed the whole to general satisfaction, and he [Keimer] received a sum of money for this work, which enabled him to keep his head above water for a considerable time longer.'

At Burlington, Franklin formed acquaintance with all the principal personages of the province, who were attracted by his superior abilities and intelligence. Amongst these was the inspector-general, Isaac Decon, 'who,' says Franklin, 'was a shrewd and subtle old man. He told me that his first employment had been that of carrying clay to the brickmakers ; that he did not learn to write till he was somewhat advanced in life ; that he was afterwards employed as underling to a surveyor, who taught him his trade ; and that, by industry, he had at last acquired a competent fortune. " I foresee," said he, " that you will soon supplant this man (speaking of Keimer), and get a fortune in the business at Philadelphia." He was wholly ignorant at the time of my intention of establishing myself there or anywhere else.'

Franklin had scarcely returned from Burlington, when the types commissioned for himself and Meredith, from London, arrived ; and having settled matters with Keimer, the partners immediately took a house, and commenced business. They were in the act of opening their packages, when a countryman came in to have a job done ; and as all their cash had been expended in their various purchases, ' this countryman's five shillings,' says Franklin, ' being our first-fruits, and coming so seasonably, gave me more pleasure than any crown I have since earned.' A number of young men having, during the preceding year, formed themselves, at Franklin's suggestion, into a weekly club for the purpose of mutual improvement, they were so well pleased with the beneficial results they experienced from their meetings, that, when the originator of their society set up in business, every one exerted himself more than another to procure him employment. One of them obtained

from the Quakers the printing of forty sheets of a history of that sect, then preparing at the expense of the body. 'Upon these,' says Franklin, 'we worked exceedingly hard, for the price was very low. It was in folio, upon *pro patria* paper and in the *pica* letter, with heavy notes in the smallest type. I composed a sheet a day, and Meredith put it to press. It was frequently eleven o'clock at night, sometimes later, before I had finished my distribution for the next day's task, for the other little jobs that came in kept us back in this work; but I was so determined to compose a sheet a day, that one evening, when my form was imposed, and my day's work, as I thought, at an end, an accident broke the form, and deranged two complete folio pages. I immediately distributed and composed them anew before I went to bed.' This unwearied industry, which soon became known, acquired Franklin great reputation and credit amongst his townsmen, and business began rapidly to flow in upon them.

One of Franklin's first mercantile speculations was the establishment of a newspaper, which he accomplished after encountering a good deal of opposition. Luckily for Franklin, almost at the commencement of the newspaper, an opportunity occurred of getting rid of his partner Meredith, who had become an idle, drunken fellow, and had all along been of comparatively little use in the concern. Soon after getting the whole printing and newspaper concern into his hands, there was an outcry among the people for a new emission of paper-money. Franklin took up the cause, and by his arguments in a pamphlet which he published on the subject, contributed so greatly to the success of the proposal, and obtained himself so much popularity, that upon its being resolved to issue

the notes, Franklin was selected to print them. He then opened a stationer's shop, and from his success in business, began gradually to pay off his debts. He took care, he says, not only to be *really* industrious and frugal, but also to avoid every appearance to the contrary—was plainly dressed, and was never seen in any place of public amusement; never went fishing or hunting. A book, indeed, enticed him sometimes from his work, but even that indulgence was seldom, and by stealth. Meanwhile, his old master, Keimer, went fast to ruin; and, with the exception of old Mr Bradford, who was rich and did not care for business, he was the only printer in the place. He shortly afterwards married Miss Read, the lady named in a former part of this memoir. Franklin's behaviour to this young lady had not been altogether blameless. Previous to his sailing for England, he had exchanged pledges of affection with her, yet all the while he was away he sent her only one letter. Her friends and herself concluding that he either never meant to return, or that he wished to drop connection with her, she was induced to accept the hand of another suitor; and on his return to America, Franklin found her married—an event that seems to have given him extremely little uneasiness. The lady's husband proved a great rogue, deserted her, and it was subsequently ascertained that he had still a former wife living. After being established in business, and rising in the world, the intimacy between Franklin and her family was renewed, and it was not long ere, despite her dubious situation, they hazarded a fulfilment of their early vows. The lady was about Franklin's own age, and proved, according to his own testimony, an 'honour and a blessing' to him.

In 1731, Franklin drew up proposals for a public subscription library at Philadelphia, being the first project of the sort that had been started in America. Fifty persons at first subscribed forty shillings each, and agreed to pay ten shillings annually ; and the establishment was put under such judicious rules of management, that it was eminently successful, and was the means of spreading a taste for literature throughout Pennsylvania. Franklin was much gratified with the success of his scheme, and continued by his example to encourage habits of industry in the young, and to raise a taste for rational recreations. We now find him, at the early age of twenty-five or twenty-six, fairly embarked in life as a tradesman, citizen, and lover of literary and scientific pursuits. His first consideration was scrupulous attention to business and to his family. He mentions, in the papers which he left behind him, that, at this period of his life, he avoided all frivolous amusements ; his only relaxation being a game at chess, of which he was very fond. He devoted the greater part of his leisure time to self-examination, and moral and intellectual improvement. He endeavoured to correct what he found to be the natural or acquired faults of his character, and even aimed at the attainment of moral perfection. The manner in which he methodised his time is particularly worthy of notice. He rose at five in the morning ; the next three hours he appropriated to devotional exercise, study, cleaning of the person, and breakfast. From eight till twelve he was at work. From twelve till two he read, and performed any casual duties, and dined. From two till five he was again at work. From five till ten he devoted to reading, conversation, intercourse with his family, and supper ; and from ten till four or five in

the morning, to sleep ; after which he arose and pursued the same routine as before. We thus see that early rising was a leading feature in his habits of life, and to this alone he doubtless owed much of his success. Amidst the numerous temptations of life, he doubtless experienced considerable difficulty in maintaining the integrity of his system. Nevertheless, he persevered, forced himself to be methodic, and was thus able to proceed with studies tending greatly to his mental improvement, and his increase in useful knowledge. By dint of hard study, he taught himself the French, Italian, and Spanish languages, and also made himself in some degree acquainted with Latin, of which he had acquired only a limited knowledge at school.

In his household affairs the most exact economy prevailed ; and for several years after his marriage, his breakfast consisted simply of bread and milk, which he ate from a penny or two-penny porringer, with a pewter spoon. Fortunately, his wife was as much disposed to be industrious as he was ; she assisted him in his business, folded the sheets of books which he printed, kept his shop, and executed other humble but useful duties. By following this industrious and economical plan of living, and centering all their affections at home, they gradually accumulated wealth, and were enabled to possess comforts and luxuries which were at first beyond their reach. Still, Franklin was not puffed up by prosperity, but continued to live in a style of simplicity agreeable to the notions he had formed at the outset of his career.

In conducting his business, he happily united the occupation of a printer with the profession of an author, and thus became the publisher of his own literary

productions. No large work, however, was given by him to the world. His writings were chiefly of a minor character, in the form of detached essays on miscellaneous subjects. Besides editing his newspaper, he conducted and published an almanac, which he began in 1732, and continued for a period of twenty-five years. This almanac bore the feigned name, Richard Saunders, and hence acquired the title of *Poor Richard's Almanac*, by which it became extensively known. It was chiefly remarkable for the numerous and pithy maxims it contained, all tending to exhort to industry and frugality; and, at its conclusion, these maxims were collected and thrown into a connected discourse, under the title of the *Way to Wealth*. This production has been highly esteemed, and forms one of the best miscellaneous papers of the author.

It may readily be supposed that a man with so much useful talent and excellence of behaviour in private life would not be allowed to remain long undistinguished. Accordingly, in the year 1736, he was appointed clerk to the General Assembly at Pennsylvania. No opposition was made to his appointment the first year; but, on the next election, a new member of the House opposed his return in a long speech. Franklin was, however, again elected, much to his satisfaction; for although the place was one of almost no direct emolument, it gave him an opportunity of making friends amongst the members, and ultimately to secure to himself the printing of most of the public papers, which was previously shared with his rivals. In the following year, 1737, he supplanted his rival in trade, Bradford, in the office of deputy-postmaster for the state of Pennsylvania. These honourable preferments induced him to incline his thoughts

to public affairs, and take a more active part in them than he had hitherto done.

He first turned his attention to the state of the city police, which was then in a shameful condition, and he soon effected a thorough reformation in the whole system. He suggested and promoted the establishment of a fire-insurance company, the first that was projected in America. He afterwards successively exerted himself in organising a philosophical society, an academy for the education of youth, and a militia for the defence of the province. In short, every department of the civil government, as he tells us, and almost at the same time, imposed some duty upon him. 'The governor,' says he, 'put me into the commission of the peace; the corporations of the city chose me one of the common council; and the citizens at large elected me (1747) a burgess to represent them in Assembly. This latter station was the more agreeable to me, as I grew at length tired with sitting there to hear the debates, in which, as clerk, I could take no part, and which were often so uninteresting, that I was induced to amuse myself with making magic squares, or circles, or anything, to avoid weariness; and I conceived my becoming a member would enlarge my power of doing good. I would not, however, insinuate that my ambition was not flattered by all these promotions—it certainly was, for, considering my low beginning, they were great things to me; and they were still more pleasing, as being so many spontaneous testimonies of the public good opinion, and by me entirely unsolicited.'

At this time there was no military defensive force in Pennsylvania. The inhabitants were mostly of the Society of Friends or Quakers, and neglected to take any measures of precaution against the dangers to which,

from the French possessions in Canada, they were continually exposed. All the exertions of the governor of the province to induce the Assembly to pass a militia law proved ineffectual. Franklin thought something might be done by a subscription among the people; and, to pave the way for this, he wrote and published a pamphlet called *Plain Truth*. In this he clearly exposed their helpless and perilous situation, and demonstrated the necessity of co-operating for their mutual defence. The pamphlet had a sudden and surprising effect. A meeting of the citizens was held, at which proposals of the intended union, previously drawn up and printed by Franklin, were distributed about the room, to be signed by those who approved of them; and when the company separated, it was found that above twelve hundred signatures had been appended to the papers. Other copies were distributed through the province, and the subscribers at length amounted to upwards of ten thousand! All these individuals furnished themselves, as soon as they could, with arms; formed themselves into companies and regiments; chose their officers, and had themselves regularly instructed in military exercises. The women made subscriptions amongst themselves, and provided silk colours, which they presented to the companies, embellished with devices and mottoes furnished by Franklin. Such influence has one master-mind amongst his fellows in a time of emergency!

Franklin's modesty, however, was more than commensurate with his patriotism. The officers of the companies composing the Philadelphia regiment unanimously chose him for their colonel; but he declined the office in favour of a man of greater wealth and influence, who, on his recommendation, was immediately elected.

The attention of Franklin was about the year 1746 attracted to pursuits connected with natural philosophy, particularly to electricity, a subtle and mysterious quality, which, after a series of experiments, he began to suspect was identical with lightning ; or, in other words, that lightning was the electric fluid developed naturally in the atmosphere. This was a great discovery in physical science, which he fully substantiated, by means of a kite which he raised at a favourable opportunity into the air, in the year 1752. The account which he gives of this remarkable experiment is full of interest. He tells us that the kite being raised, he fastened a key to the lower extremity of the hempen string, and then insulating it by attaching it to a post by means of silk, he placed himself under a shed to watch the result. For some time no signs of electricity appeared. A cloud, apparently charged with lightning, had even passed over them without producing any effect. At length, however, just as Franklin was beginning to despair, he observed some loose threads of the hempen string rise and stand erect, exactly as if they had been repelled from each other by being charged with electricity. He immediately presented his knuckle to the key, and, to his inexpressible delight, drew from it the well-known electrical spark. He said afterwards that his emotion was so great at this completion of a discovery which was to make his name immortal, that he heaved a deep sigh, and felt that he could that moment have willingly died. As the rain increased, the cord became a better conductor, and the key gave out its electricity copiously. Had the hemp been thoroughly wet, the bold experimenter might, as he was contented to do, have paid for his discovery with his life. He afterwards brought down the lightning into

his house, by means of an insulated iron rod, and performed with it, at his leisure, all the experiments that could be performed with electricity. But he did not stop here. His active and practical mind was not satisfied even with the splendid discovery, until he had turned it to a useful end. It suggested to him, as is well known, the idea of a method of preserving buildings from lightning, which is extremely simple and cheap, as well as effectual, consisting, as it does, in nothing more than attaching to the building a pointed metallic rod, rising higher than any part of it, and communicating at the lower end with the ground. This rod the lightning is sure to seize upon, in preference to any part of the building; by which means it is conducted to the earth, and prevented from doing any injury.

Franklin's discoveries did not at first attract much attention in England; and, in fact, he had the mortification to hear that his paper on the similarity between lightning and electricity had been ridiculed when read in the Royal Society. Having fallen, however, into the hands of the naturalist Buffon, that celebrated man translated and published it at Paris, when it speedily excited the astonishment of all Europe. What gave his book the more sudden and general celebrity, was the success of one of its proposed experiments for drawing lightning from the clouds, made at Marly. This engaged the public attention everywhere. The 'Philadelphia experiments,' as they were called, were performed before the king and court, and all the curious of Paris flocked to see them. Dr Wright, an English physician, being at Paris at the time, wrote to a member of the Royal Society of London an account of these wonders, and stating the astonishment of all the learned men abroad

at Franklin's writings being so little noticed in England. The Society were thus in a manner compelled to pay more attention to what they had previously considered as chimerical speculation, 'and soon,' says Franklin, 'made me more than amends for the slight with which they had before treated me. Without my having made any application for that honour, they chose me a member, and voted that I should be excused the usual payments, which would have amounted to twenty-five guineas, and ever since have given me their *Transactions* gratis. They also presented me with the gold medal of Sir Godfrey Copley for the year 1753, the delivery of which was accompanied with a very handsome speech of the president, Lord Macclesfield, wherein I was highly honoured.'

Although the numerous important public duties which Franklin was called upon latterly to discharge, chiefly engrossed his time, he still returned to his philosophical studies on every occasion that offered, and made several curious and interesting discoveries respecting heat and sound.

In 1757, he visited England on an important political mission from the American colonies, the object of which he speedily accomplished in a satisfactory manner. He remained in England till the year 1762, and during the interval visited many parts of the country, also the continent of Europe, being in every place received with the most marked attention and respect. In the course of a tour in 1759, he visited Scotland with his son, when the University of St Andrews conferred upon him the degree of Doctor of Laws. Its example was followed by Edinburgh and Oxford; and he was also elected a member of almost every learned society throughout Europe.

He returned to America in 1762 ; but again, in 1764, returned to England, on a mission still more important than the former. This was to induce the government to procure a redress of grievances to the colonies. His exertions in this respect are well known to have been fruitless, and he returned to America in 1775, on the outbreaking of the revolutionary war. In 1778, he was sent as ambassador from the American congress to the court of France. Here he was of great service to his country, and he did not return home till 1785, before which time he had negotiated at Paris the complete independence of the American colonies, now the United States. Franklin's reception at the court of France was exceedingly flattering, the king, Louis XVI. shewing him every mark of esteem. He was affected by the attentions shewn to him, but this was not from mere personal vanity, but from reflections on his situation. In his juvenile days, his venerable father, in inciting him to virtuous pursuits, sometimes reminded him of the cheering proverb of Solomon : ' Seest thou a man diligent in his calling, he shall stand before kings, he shall not stand before mean men.' He now felt the proverb in all its force. From the condition of a humble mechanic, he was raised, in a manner the most honourable, to be an associate of the most learned and powerful of his fellow-creatures. He says, he lived not only to stand before five kings, but to sit with one at dinner.

Shortly after his return to America, where he was received with the highest honours, he was elected president of the Supreme Executive Council, and lent all his still perfect energies to consolidating the infant government. Age and infirmities, however, claimed their usual ascendancy, and in 1788 he retired from public life.

Franklin's last public act—and it was one in beautiful accordance with the whole tenor of his life—was putting his signature, as president of the Anti-slavery Society, to a memorial presented to the House of Representatives, praying them to exert the full powers intrusted to them to discourage the revolting traffic in the human species. This was on the 12th of February 1789. From this day forward, he was confined almost constantly to bed with the stone, from which he suffered the most excruciating agony. Yet when his paroxysms of pain drew forth, as they did occasionally, an irrepressible groan, he would observe, he was afraid he did not bear his sufferings as he ought—acknowledged his grateful sense of the many blessings he had received from the Supreme Being, who had raised him from small and low beginnings to such high rank and consideration among men, and made no doubt but his present afflictions were kindly intended to wean him from a world in which he was no longer fit to act the part assigned him. He latterly sank into a calm lethargic state; and, on the 17th April 1790, he quietly expired. He was then aged exactly eighty-four years and three months.

In looking back on Franklin's career, it is evident that the principal feature in his character was *worldly prudence*—not in the usual and selfish acceptation of the term, but that prudence, founded on true wisdom, which dictates the practice of honesty, industry, frugality, temperance—in short, all those qualities which may be classified under the name of 'moral virtues,' as being the only certain means of obtaining distinction, respect, independence, and mental cheerfulness. There is no other writer who inculcates lessons of practical wisdom in a more agreeable and popular manner, and we much

regret that the limits of this work prevent our giving many extracts illustrative of this quality. His whole conduct and writings, indeed, present the somewhat singular union of great genius with practical good sense, and of singular worldly shrewdness with the loftiest integrity of principle. The greatest worldly honours—and few have attained higher—could not for a moment make him forget or deviate from the principles with which he started in life. Equally by precept and example, he shewed what great ends, not only as regards personal advancement, but the good of mankind, can be achieved, under originally adverse circumstances, by steady perseverance along with a cultivation of the moral and intellectual faculties.

JAMES FERGUSON.

JAMES FERGUSON, an ingenious experimental philosopher, mechanist, and astronomer, was born in the year 1710, a few miles from Keith, a village in Banffshire, in the north of Scotland. His parents were of the poorest order, but honest and religious, and by toilsome labour in the cultivation of a few rented acres of land, contrived to support a large family of children. Of the manner in which James acquired the rudiments of education, and how he struggled to rise from obscurity to distinction, we have a most interesting account in the memoir of himself, prefixed to his *Select Mechanical Exercises*, which we cannot do better than quote in an abridged form.

‘At his leisure hours, my father taught his children to read and write; and it was while he was teaching my

elder brother to read the Scottish Catechism that I acquired my reading. Ashamed to ask my father to instruct me, I used, when he and my brother were abroad, to take the Catechism, and study the lesson which he had been teaching my brother; and when any difficulty occurred, I went to a neighbouring old woman, who gave me such help as enabled me to read tolerably well before my father had thought of teaching me. Some time after, he was agreeably surprised to find me reading by myself: he thereupon gave me further instruction, and also taught me to write; which, with about three months I afterwards had at the grammar-school at Keith, was all the education I ever received.

‘My taste for mechanics was soon developed; but as my father could not afford to maintain me while I was in pursuit only of these matters, and as I was rather too young and weak for hard labour, he put me out to a neighbour to keep sheep, which I continued to do for some years; and in that time I began to study the stars in the night. In the daytime I amused myself by making models of mills, spinning-wheels, and such other things as I happened to see. I then went to serve a considerable farmer in the neighbourhood, whose name was James Glashan. I found him very kind and indulgent; but he soon observed, that in the evenings, when my work was over, I went into a field with a blanket about me, lay down on my back, and stretched a thread with small beads upon it, at arms-length, between my eye and the stars, sliding the beads upon it till they hid such and such stars from my eye, in order to take their apparent distances from one another; and then, laying the thread down on a paper, I marked the stars thereon by the beads, according to their respective positions,

having a candle by me. My master at first laughed at me, but when I explained my meaning to him, he encouraged me to go on; and that I might make fair copies in the daytime of what I had done in the night, he often worked for me himself. I shall always have a respect for the memory of that man.

‘One day he sent me with a message to the minister at Keith, to whom I had been known from my childhood. I carried my star-papers to shew them to him, and found him looking over a parcel of maps, which I surveyed with great pleasure, as they were the first I had ever seen. He then told me that the earth is round like a ball, and explained the map of it to me. I requested him to lend me that map, to take a copy of it in the evenings. He cheerfully consented to this, giving me at the same time a pair of compasses, a ruler, pens, ink, and paper; and dismissed me with an injunction not to neglect my master’s business by copying the map, which I might keep as long as I pleased. For this pleasant employment, my master gave me more time than I could reasonably expect; and often took the thrashing-flail out of my hands, and worked himself, while I sat by him in the barn, busy with my compasses, ruler, and pen.’

Ferguson was soon after introduced to the butler of a gentleman in the neighbourhood. The butler was a well-informed man, and besides teaching him decimal arithmetic, algebra, and the elements of geometry, made him a present of Gordon’s *Geographical Grammar*, which was accepted as a great treasure. From the descriptions given in the book, he made an artificial globe by turning a piece of wood, and was able, from this humble mechanism, to solve several astronomical problems. Thus struggling to acquire knowledge, it was necessary

for him to earn his bread by manual labour. The hardships he underwent in working for a farmer seriously infringed on his health, and he had to go home to recruit.

In order to amuse himself, he says, 'I made a wooden clock, the frame of which was also of wood; and it kept time pretty well. The bell on which the hammer struck the hours was the neck of a broken bottle. Having then no idea how any timekeeper could go but by a weight and a line, I wondered how a watch could go in all positions. Happening one day to see a gentleman ride by my father's house, which was close by a public road, I asked him what o'clock it then was: he looked at his watch, and told me. As he did that with so much good-nature, I begged of him to shew me the inside of his watch; and though he was an entire stranger, he immediately opened the watch, and put it into my hands. I saw the spring-box with part of the chain round it, and asked him what it was that made the box turn round; he told me that it was turned round by a steel spring within it. Having then never seen any other spring than that of my father's gun-lock, I asked how a spring within a box could turn the box so often round as to wind all the chain upon it. He answered, that the spring was long and thin, that one end of it was fastened to the axis of the box, and the other end to the inside of the box; that the axis was fixed, and the box was loose upon it. I told him I did not yet thoroughly understand the matter. "Well, my lad," says he, "take a long thin piece of whalebone, hold one end of it fast between your finger and thumb, and wind it round your finger; it will then endeavour to unwind itself; and if you fix the other end of it to the

inside of a small hoop, and leave it to itself, it will turn the hoop round and round, and wind up a thread tied to the outside of the hoop." I thanked the gentleman, and told him I understood the thing very well. I then tried to make a watch with wooden wheels, and made the spring of whalebone; but found that I could not make the watch go when the balance was put on because the teeth of the wheels were rather too weak to bear the force of a spring sufficient to move the balance, although the wheels would run fast enough when the balance was taken off. I inclosed the whole in a wooden case very little bigger than a breakfast tea-cup; but a clumsy neighbour one day looking at my watch, happened to let it fall, and, turning hastily about to pick it up, set his foot upon it, and crushed it all to pieces; which so provoked my father, that he was almost ready to beat the man, and discouraged me so much that I never attempted to make such another machine again, especially as I was thoroughly convinced I could never make one that would be of any real use.

'As soon as I was able to go abroad, I carried my globe, clock, and copies of some other maps besides that of the world, to the late Sir James Dunbar of Durn, about seven miles from where my father lived. Sir James received me in a very kind manner, was pleased with what I shewed him, and desired I would clean his clocks. This, for the first time, I attempted; and then began to pick up some money in that way about the country, making Sir James's house my home, at his desire.

'Two large globular stones stood on the top of his gate; on one of them I painted with oil-colours a map of the terrestrial globe, and on the other a map of the

celestial, from a planisphere of the stars which I copied on paper from a celestial globe belonging to a neighbouring gentleman. The poles of the painted globe stood toward the poles of the heavens ; on each the twenty-four hours were placed around the equinoctial, so as to shew the time of the day when the sun shone out, by the boundary where the half of the globe at any time enlightened by the sun, was parted from the other half in the shade ; the enlightened parts of the terrestrial globe answering to the like enlightened parts of the earth at all times. So that whenever the sun shone on the globe, one might see to what places the sun was then rising, to what places it was setting, and all the places where it was then day or night, throughout the earth.

‘ During the time I was at Sir James’s hospitable house, his sister, the Honourable Lady Dipple, came there on a visit, and Sir James introduced me to her. She asked me whether I could draw patterns for needlework on aprons and gowns. On shewing me some, I undertook the work, and drew several for her, some of which were copied from her patterns, and the rest I did according to my own fancy. On this, I was sent for by other ladies in the country, and began to think myself growing very rich by the money I got for such drawings, out of which I had the pleasure of occasionally supplying the wants of my poor father. Yet all this while I could not leave off star-gazing in the nights, and taking the places of the planets among the stars by my above-mentioned thread. By this I could observe how the planets changed their places among the stars, and delineated their paths on the celestial map which I had copied from the above-mentioned celestial globe.

‘ Some time afterwards, Lady Dipple told me that she

was to go to Edinburgh next spring, and that, if I would go thither, she would give me a year's bed and board at her house, gratis, and make all the interest she could for me among her acquaintance there. I thankfully accepted of her kind offer, and instead of giving me one year, she gave me two. I carried with me a letter of recommendation from Lord Pitsligo, to a painter in Edinburgh, who allowed me to pass an hour every day at his house, for a month, to copy from his drawings, and said he would teach me to paint in oil-colours if I would serve him seven years, and my friends would maintain me all that time: but this was too much for me to desire them to do, nor did I choose to serve so long.'

Somewhat discouraged, but still anxious to push on, if possible, as a painter, he was fortunate in becoming known to several ladies of distinction in Edinburgh, who employed him to execute some small pictures from nature. Resolved to pursue this new line of industry, he, by dint of practice and earnest study, succeeded to the satisfaction of his friends. Through recommendations, he says, 'I soon had as much business as I could possibly manage, so as not only to put a good deal of money in my own pocket, but also to spare what was sufficient to help to supply my father and mother in their old age. Thus a business was put into my hands, which I followed for six-and-twenty years.

'Lady Dipple, being a woman of the strictest piety, kept a watchful eye over me at first, and made me give her an exact account at night of what families I had been in throughout the day, and of the money I had received. She took the money each night, desiring I would keep an account of what I had put into her hands; telling me

that I should duly have out of it what I wanted for clothes, and to send to my father. But in less than half a year, she told me that she would thenceforth trust me with being my own banker ; for she had made a good deal of private inquiry how I had behaved when I was out of her sight through the day, and was satisfied with my conduct.'

At the end of two years, Ferguson quitted Edinburgh, and shortly afterwards we find him at Inverness, where he endeavoured to make a livelihood as an artist. He had still, however, a hankering for some occupation connected with astronomy, and returned to Edinburgh. Here he made himself known to Mr Maclaurin, Professor of Mathematics, by whom he was kindly patronised, and instructed on points wherein he was deficient. 'One day,' continues Ferguson, 'I requested him to shew me his orrery, which he immediately did ; I was greatly delighted with the motions of the earth and moon in it, and would gladly have seen the wheelwork, which was concealed in a brass box, and the box and planets above it were surrounded by an armillary sphere. But he told me that he never had opened it ; and I could easily perceive that it could not be opened but by the hand of some ingenious clockmaker, and not without a great deal of time and trouble. After a good deal of thinking and calculation, I found that I could contrive the wheelwork for turning the planets in such a machine, and giving them their progressive motions, but should be very well satisfied if I could make an orrery to shew the motions of the earth and moon, and of the sun round its axis. I then employed a turner to make me a sufficient number of wheels and axles, according to patterns which I gave him in drawing ; and after having cut the teeth

in the wheels with a knife, and put the whole together, I found that it answered all my expectations. It shewed the sun's motion round its axis, the diurnal and annual motions of the earth on its inclined axis, which kept its parallelism in its whole course round the sun: the motions and phases of the moon, with the retrograde motion of the nodes of her orbit; and, consequently, all the variety of seasons, the different lengths of days and nights, the days of the new and full moons, and eclipses.

‘When it was all completed except the box that covers the wheels, I shewed it to Mr Maclaurin, who commended it in presence of a great many young gentlemen who attended his lectures. He desired me to read them a lecture on it, which I did without any hesitation, seeing I had no reason to be afraid of speaking before a great and good man who was my friend.

‘I then made a smaller and neater orrery, of which all the wheels were of ivory, and I cut the teeth in them with a file. This was done in the beginning of the year 1743; and in May that year, I brought it with me to London, where it was soon after bought by Sir Dudley Rider. I have made six orreries since that time, and there are not any two of them in which the wheelwork is alike, for I could never bear to copy one thing of that kind from another, because I still saw there was great room for improvements.’

Introduced to the Royal Society, Ferguson shewed the members of that learned body one of his orreries, and he was complimented on its execution and utility. Shortly afterwards, in 1747, he published a *Dissertation on the Harvest Moon*, which he followed up by popular and instructive treatises on astronomy and other subjects. In 1748, he began to deliver lectures on his

favourite science, illustrated by reference to an orrery which he exhibited. In this way, by lecturing, teaching, and painting, Ferguson spent thirty years of his life in London, gaining friends among all ranks, and rewarded at length by a royal pension of fifty pounds a year.

It was through the zeal of George III. in behalf of science that Ferguson was honoured with the royal bounty. His majesty had attended some of the lectures of the ingenious astronomer, and often, after his accession, sent for him to converse upon scientific topics. He had the extraordinary honour of being elected a member of the Royal Society without paying either the initiatory or the annual fees, which were dispensed with in his case, from a supposition of his being too poor to pay them without inconvenience. To the astonishment of all who knew him, it was discovered after his death that he was possessed of considerable wealth. 'Ferguson,' says Charles Hutton, in his *Mathematical Dictionary*, 'must be allowed to have been a very uncommon genius, especially in mechanical contrivances and inventions, for he constructed many machines himself in a very neat manner. He had also a good taste in astronomy, as well as in natural and experimental philosophy, and was possessed of a happy manner of explaining himself in a clear, easy, and familiar way. His general mathematical knowledge, however, was little or nothing. Of algebra he understood little more than the notation; and he has often told me that he could never demonstrate one proposition in Euclid's *Elements*; his constant method being to satisfy himself as to the truth of any problem with a measurement by scale and compasses.' He was a man of very clear judgment in everything that he professed, and of unwearied application to study; benevolent,

meek, and innocent in his manners as a child : humble, courteous, and communicative : instead of pedantry, philosophy seemed to produce in him only diffidence and urbanity. After a long and useful life, worn out with study, age, and infirmities, he died November 16, 1776.

ROBERT DODSLEY.

THE subject of this short memoir claims our respect as a very remarkable example of genius, accompanied by the most valuable attributes of character, rising from the humblest walk in life, and finally attaining distinction and fortune, without exciting either envy in those who were left behind, or jealousy in those who were rivalled. He was born, in 1703, at Mansfield in Nottinghamshire, and received only such a limited education as his parents, who were in very poor circumstances, could afford. He commenced life as footman to the Honourable Mrs Lowther, and by his good conduct in that capacity, was as successful in obtaining the esteem of those around him, as he ever was afterwards, when he had moved into more important positions in society. Having employed his leisure time in cultivating his intellect, he began at an early age to write verses, which, being shewn to his superiors, were deemed so creditable to his abilities, that he was encouraged to publish them in a volume, under the title of *The Muse in Livery*. This publication was dedicated to his mistress, and came forth under the patronage of a highly respectable list of subscribers. Such productions being then more rare than they have since become, it was regarded as a kind

of wonder. Dodsley afterwards entered the service of Mr Dartineuf, a noted voluptuary, and one of the intimate friends of Pope; and having written a dramatic piece called *The Toyshop* (founded upon a play of the preceding century), it was shewn by his new master to that distinguished poet, who was so well pleased with it, that he took the author under his protection, and made interest for the appearance of the play upon the stage.

The Toyshop was acted at Covent Garden in 1735, and met with the highest success. In a malignant epistle addressed about that time by Curll, the bookseller, to Pope, it is insinuated that this was owing to patronage alone. But nothing can seem more improbable than that Pope and his friends should be deceived as to the merit of this piece, or that they should interest themselves about a production glaringly destitute of merit. In reality, *The Toyshop* is a very clever adaptation from the *Muse's Looking-glass* of Randolph, full of effective yet delicate satire, and supported by characters in the highest degree natural, and strikingly appropriate to the purpose of the piece.

The profits arising from this play, and the distinction which it obtained for the author, were such as would have induced many men in the circumstances of Dodsley to venture upon the precarious, but in many respects tempting, life of a 'town-writer,' or author by profession. With the sober and modest author of *The Toyshop*, different considerations prevailed. Having resolved to enter upon some regular trade, he chose that of a bookseller, as the most appropriate to his taste, and that in which he might expect to turn the favour of his friends to the best account; and, accordingly, he

opened a shop of that kind in Pall-Mall. In this new situation, comparatively difficult as it may be supposed to have been, the same prudence and worth which had gained him esteem in his former condition were not less strikingly exemplified. He was able to secure for himself and his establishment the countenance of many of the first literary persons of the day, including Pope, Chesterfield, Lyttleton, Shenstone, Johnson, and Glover, and also of many persons of rank who possessed a taste for letters; and thus, in the course of a few years, he became one of the principal persons of his trade in the metropolis. Proceeding at the same time in his career as an author, he wrote a farce entitled *The King and the Miller of Mansfield*, founded on an old ballad of that name, and referring to scenes with which he had been familiar in early life. This was produced at Drury Lane in 1737, and was so highly successful, that he was induced to write a less fortunate sequel, under the title of *Sir John Cockle at Court*. The former continues to be occasionally represented. His next dramatic performance was a farce, founded on a ballad, entitled *The Blind Beggar of Bethnal Green*, which was not attended with much success. His only other composition of this kind was *Rex et Pontifex*, which he designed as a novelty in pantomime, but which was never produced on the stage. The general character of his comic plays was pleasing; they had not what would now be called much strength, but they excelled the most of the contemporary productions of their class in morality.

From an early period of life, Dodsley would seem to have had a taste for the almost forgotten drama of the reigns of Elizabeth and the first two Stuarts—a vast mine of poetical wealth, which the fastidious delicacy of

later times had condemned to obscurity, on account of some peculiarities in a great measure external. In the present age, which is honourably distinguished by a revived relish of the beauties of the Elizabethan literature, the effort made by the subject of our memoir to resuscitate a portion of it will meet with due appreciation. Animated by a spirit of adventure, uncommon in his own time, he published, in 1744, a *Collection of Plays by Old Authors*, in twelve volumes duodecimo, prefaced by a history of the stage, and illustrated by biographical and critical notes; the whole being dedicated to Sir C. C. Dormer, to whom Mr Dodsley acknowledges great obligations for the use of materials. The work was reprinted in 1780, by Mr Isaac Reed, and once more in 1825, on each occasion with some important improvements and necessary additions; but no one was more sensible, or could have more generously expressed his sense of the value of Mr Dodsley's labours, than the erudite antiquary just named. Another of the more valuable works projected by Dodsley was the *Preceptor*, first published in 1749, and designed to embrace what was then thought a complete course of education. It contained treatises on reading, elocution, and composition; on arithmetic, geometry, and architecture; on geography and astronomy; on chronology and history; on rhetoric and poetry; on drawing; on logic; on natural history; on ethics, or morality; on trade and commerce; on laws and government; and on human life and manners—each being the composition of some person eminent in the branch of knowledge to which it referred. Dodsley's *Preceptor* attained a high popularity, and, in the course of a few years, went through numerous editions. We shall here advert to a few of the other

works originated by him, or in which he acted as editor. *A Collection of Poems by Eminent Hands*, in six volumes, was commenced in 1752, and presented for the first time to the world a considerable number of the most admired poetical compositions of the age. In 1758, he commenced the publication of an *Annual Register*, which was the first work of that kind that appeared in England. Several of the earlier volumes were compiled by Burke, and the work has ever since been conducted with remarkable judgment, as well as success, notwithstanding the appearance of more than one rival. His *Select Fables of Æsop and other Fabulists* appeared in 1760, and was at once pronounced a work of classical elegance. The first book contained ancient, the second modern, and the third original fables, the last being chiefly the composition of the editor.

The original works written by Dodsley during the same period were not numerous. In 1748, he produced a loyal masque on the occasion of the peace of Aix-la-Chapelle, and, two years afterwards, a small prose work, entitled the *Economy of Human Life*, in which the social duties are treated in a style intended to resemble that of the Scriptures and other oriental writings. Though the literary and philosophical merits of the latter work are not great, it attained great popularity, and became extensively useful among young persons, for whose instruction it was more particularly designed. Like other successful books, it was followed by numerous slavish imitations, such as the *Economy of Female Life*, the *Economy of a Winter Day*, the *Second Part of the Economy of Human Life*, the *Economy of the Mind*, and many other Economies. One book of a poem on *Public Virtue*, and an ode entitled *Melpomene*, next exercised his pen; and in

1758, he ventured to rise to tragedy, and composed *Cleone*, the fable of which he derived from a French fiction. Though Garrick expressed a mean opinion of the play, and it was consequently taken to Covent Garden, it long drew full audiences, which was in part attributed to Mrs Bellamy's acting of the heroine. An attempt by Mrs Siddons to revive it did not succeed, owing, it is said, to the excess of pathos which it required from her unequalled performance in scenes of maternal distress. Dr Johnson admired *Cleone* so much as to say, that, if Otway had written it, no other of his pieces would have been remembered; which being reported to the author, he modestly said, 'it was too much.' A less prepossessed critic allows it to be considerably inferior to the plays of Otway and Southern, but to be equal to any of the tragedies of the latter half of the eighteenth century, excepting Home's *Douglas*.

A long and prosperous professional career enabled Mr Dodsley to retire from business, some years before his death, with a large fortune, which, however, made no alteration upon his modest and amiable character. His humble origin was neither a matter which he was anxious to conceal, nor a subject of vulgar boasting. He did not forget it, nor did he allow it to affect his deportment in a manner that could be disagreeable to others. Johnson mentions, that on Dartineuf, the epicure, being introduced into Lord Lyttleton's *Dialogues of the Dead*, and the conversation turning one day upon that subject, Dodsley remarked: 'I knew him well, for I was once his footman;' an expression which seems to us to denote the most perfect exemption from the vice of affectation. 'Mindful,' says one of his biographers, 'of the early encouragement which his own talents

met with, he was ever ready to give the same opportunity of advancement to those of others ; and on many occasions he not only acted as publisher, but as patron, to men of genius. There was no circumstance by which he was more distinguished than by the grateful remembrance which he retained and always expressed towards the memory of those to whom he owed the obligation of being first taken notice of in life. Modest, sensible, and humane, he retained the virtues which first brought him into notice, after he had obtained wealth to satisfy every wish which could arise from the possession of it. He was a generous friend, and acquired the esteem and affection of all who were acquainted with him. It was his happiness to pass the greater part of his life in an intimacy with men of the brightest abilities, whose names will be revered by posterity; by most of whom he was loved as much for the virtues of his heart, as he was admired on account of his writings.'

Mr Dodsley died of gout, at the house of his friend, Mr Spence, at Durham, September 25, 1764, in the sixty-first year of his age, and was interred in the Abbey Churchyard, where a handsome monument was erected to him. His miscellaneous poetry is usually printed in the collective editions of the *British Poets*, and his *Fables* and *Economy of Human Life* still continue to enjoy their early popularity. It is not, however, for his distinction in literature that he is here noticed, but for those amiable and respectable qualities of personal character which distinguished him alike in a humble and an elevated condition, and were mainly, we are inclined to believe, the causes of his rising from the one to the other. He will ever be esteemed as a remarkable example of genius springing up and advancing to

usefulness amidst unfavourable circumstances, and of worth which, in all circumstances, was alike conspicuous and alike recognised. Nor is he, perhaps, less remarkable as an example of the union of genius and worth. In too many cases the former quality is found in connection with properties which disable and degrade it, but in Dodsley it consisted with the finest affections, the purest morality, and the most laudable prudence. Finally, his life is valuable as proving that the original rank of no man in this enlightened land, however humble, is calculated to affect him permanently in the consideration of those who have had opportunities of judging of his personal merit.

JOHN HOWARD.

JOHN HOWARD, an Englishman, who has justly obtained a celebrity over the whole civilised world for his extraordinary and unceasing efforts in the cause of suffering humanity, and for which he has been generally and justly entitled 'The Benevolent Howard,' was born about the year 1726, at Clapton, in the parish of Hackney, a large village immediately adjoining London. To this place his father seems to have removed from the pursuit of his business as an upholsterer, in Long Lane, Smithfield, where he had acquired a considerable fortune. The education of young Howard was extremely superficial; and when he left school, he was put as an apprentice to a wholesale grocer in the City; but this situation not being at all to his taste, he embraced the opportunity, on coming of age, of purchasing from his

master the remainder of his time. By his father's will, he was not to come into the possession of his fortune until he reached his twenty-fourth year, and then he became entitled to the sum of £7000, in addition to the whole of his father's landed property, his plate, furniture, pictures, &c. Coming thus into the possession of a respectable patrimony, he was now at liberty to follow out the bent of his inclinations, which he did by setting out on his travels through France and Italy. On his return, being of delicate health, and inclined to consumption, he was put upon a rigorous regimen, which is said to have laid the foundation of that extraordinary abstemiousness and indifference to the gratification of his palate which ever after so much distinguished him. In 1752, while twenty-five years of age, he married a lady in her fifty-second year; a step he took in consequence of having received from her many marks of kind attention during a sickness with which he was overtaken. The death of his wife in a few years put an end to this somewhat imprudent connection. Soon after the death of his wife, he resolved upon leaving England on another tour, with a view to direct his mind from the melancholy reflections which that event had occasioned.

The country which Howard first intended to visit was Portugal, then rendered particularly interesting by the situation of its capital, still smoking in ruins from the effects of a tremendous earthquake. A great part of its capital, Lisbon, and thousands of its inhabitants, had been embowelled in the earth. It was to this sublime spectacle that Mr Howard's attention was principally directed; and he accordingly took his passage in a vessel, which, unfortunately, was captured by a French privateer. This event, unlucky in itself, gave a turn to the fate of the

young philanthropist, and proved ultimately beneficial to mankind. His captors used him with great cruelty, for, after having been kept forty hours without food or water, he was carried into Brest, and confined, with the other prisoners, in the castle of that place. Here, after being cast with the crew and the rest of the passengers into a filthy dungeon, and there kept a considerable time without nourishment, a joint of mutton was at length thrown into the midst of them, and, for want of a knife, they were obliged to tear it in pieces, and gnaw it like dogs. In this dungeon he and his companions lay for six nights upon the floor, with nothing but straw. He was afterwards removed to Morlaix, and thence to Carpaix, where he was two months upon parole. He had no sooner obtained his own liberty, than he exerted all his influence to procure the liberation of some of his fellow-countrymen. Whilst at Carpaix, he obtained sufficient evidence of the English prisoners of war in France being treated with inhuman barbarity, and he did not rest till he influenced the government in their behalf. It is to this event that Mr Howard himself refers the first excitement of that attention to those who were sick and in prison, which afterwards occupied the greater part of sixteen years. Soon after his return to England, he formed a connection with an amiable young lady, whom he married, and, with her assistance, he carried into effect various schemes of benevolence for meliorating the condition of his tenantry and the poor in his neighbourhood. Of this valuable assistance he was, however, soon deprived, by the death of his wife, soon after she had given birth to a son. In 1769-70, Mr Howard paid a third and fourth visit to the continent, of which he has left various memoranda, written in a

strain of unaffected Christian piety. In 1773, while in his retirement in England, he was created high-sheriff of the county of Bedford. In this office he had numberless opportunities of inspecting the condition of the jails and bridewells under his jurisdiction, of remedying grievances, and allèviating the distresses of poor prisoners. The more and more that this benevolent man saw of the condition of the English prisons, he became the more anxious to pursue his investigations all over the country. He proceeded upon tours into the counties of Hertford, Berks, Wilts, Dorset, Hants, Sussex, Surrey, &c. The scenes of misery which now came under his notice were truly deplorable. At Salisbury, just without the prison gate, was a chain passed through a round staple fixed in the wall, at each end of which a debtor, padlocked by the leg, stood offering to those who passed by, nets, laces, purses, &c. made in the prison. At Winchester, Mr Howard saw a destructive dungeon for felons, eleven steps under ground, dark, damp, and close. In it the surgeon of the jail informed him that twenty prisoners had died of the jail-fever in one year. One of the places which Mr Howard inspected in the course of his journey was the bridewell of Surrey, at Guildford, in which he found neither bedding, straw, nor work. Soon after his return from making investigations into the condition of these abodes of vice and misery, he was examined before a committee of the House of Commons touching the knowledge he had thus acquired; and, being called to the bar, the Speaker acquainted him that the House was very sensible of the humanity and zeal which had led him to visit the several jails of this kingdom, and conveyed to him the grateful thanks of the House and the country for his benevolent exertions

in behalf of the most destitute and outcast members of the community.

Mr Howard continued, throughout the year 1773-74, to inspect the prisons and bridewells of England, and on one occasion extended his tour of philanthropy into Scotland and Ireland. In 1775, he proceeded to the continent for the purpose of examining the jails in France, Holland, and part of Flanders, Germany, and Switzerland, mostly all of which he found under better management than those in Great Britain. He was particularly pleased with the prisons of Holland, which presented a model which, except in a few points, he wished to have seen adopted in England and by every nation on the globe. In travelling, Mr Howard lived in the plainest manner; generally carrying along with his luggage a tea-kettle and other utensils, as well as the materials for making tea, of which he was fond, for its simple exhilarating qualities. At the inns, however, he generally ordered the best victuals and wines, so that there might be no complaint as to his stinginess; but these luxuries he seldom tasted. When he considered himself ill-treated by postillions, he punished them by withholding extra fees; but to shew that he did not do so for the purpose of saving money, he sent his servant to gather the poor of the place, and, in the presence of the postillion, distributed among them the sum he would have paid. These traits of character becoming widely known, he in time was well known and carefully attended to wherever he travelled. On one occasion, he happened to visit a monastery at Prague, where he found the inmates feasting on a day which ought to have been devoted to abstinence. He was so much displeased with this breach of discipline, that he

threatened to proceed to Rome to inform the Pope; and it was only after the monks had made the most humiliating apology, and expressed their contrition, that he promised to be silent on the subject to the head of their church. In 1781, he again departed from England on a tour of philanthropy, in order to proceed through Denmark, Sweden, Russia, Poland, and some other countries in the north of Europe, and with the view of inspecting the prisons and hospitals on his route. Copenhagen, Stockholm, Petersburg, and Moscow were respectively visited, and in each he collected valuable information on the state of the common jails and modes of punishment. Having thus visited every state of Europe whence he could hope to derive assistance for the completion of the great design which animated him, except the two southern kingdoms of Spain and Portugal, he next directed his course thither, and on this journey visited the prisons of Madrid, Lisbon, and other populous towns. This tour being completed, he returned to England, and finished his fourth general inspection of the English jails, preparatory to the publication of a second edition of his *Appendix to the State of Prisons*, a work he had some time before given to the public. When these journeys were finished, he summed up the number of miles which, in less than ten years, he had travelled in his own country and abroad, on the reform of prisons, bridewells, and hospitals, and found that they formed a total of 42,033. When, in the spring of 1784, Mr Howard had laid before the public the result of his minute inspection of the prisons, and many of the hospitals of his own country, and of the principal states of Europe, he retired to his estate at Cardington, in whose calm seclusion he purposed to spend the remaining years

of his existence. The benevolent Howard had now nothing to embitter his peace but the conduct of his son, who, having been sent to the University of Edinburgh, and placed under the care of the venerable Dr Blacklock, unhappily contracted habits of dissipation and extravagance, which were his own ruin, and well-nigh broke his father's heart.

After having devoted more than eleven years of his valuable existence to the reformation of the jails and the improvement of the hospitals of his own country, as well as those of foreign states, he determined again to quit his home on a journey of benevolence, more important to the interests of the human race, though fraught with greater danger to himself than any he had yet undertaken. His plan was indeed the most humane and beneficent that ever entered into the mind of man, for it was to check the progress of devouring pestilence, by inspecting the condition of the principal lazarettos in Europe, and, if possible, throwing a light on that most dreadful of all scourges of mankind—the plague. On this tour of mercy, he visited the Italian states, and from thence passed by sea to Turkey, in which country he examined the hospitals and prisons of Constantinople, Smyrna, and other places. While on this expedition, he ‘succeeded’ in getting on board a vessel with a foul bill of health; and, while in it at sea, the vessel was attacked by a Moorish privateer; in the engagement which took place, he fought with great bravery, and aided in repelling the attack of the barbarians. When, along with the crew, he arrived in Venice, he submitted to go through the most shocking privations in a loathsome lazaretto, in order to acquire knowledge of the management of those supposed to be labouring under

plague. On all these trials, his good spirits never forsook him. Being liberated in due course of time, he returned to England, and resumed his inspection of the town and county jails and bridewells. It is mentioned that he frequently exercised his liberality in relieving poor debtors from confinement by paying their debts. 'I have often seen him come to his lodgings,' says the journal of his attendant in most of his tours, 'in such spirits and joy, when he would say to me: "I have made a poor woman happy! I have sent her husband home to her and her children."' He was exceedingly methodical in spending his time. He generally declined every invitation to dinner or to supper whilst on his tours; abstained from visiting every object of curiosity, however attractive, and even from looking into a newspaper, lest his attention should be diverted from the grand purpose in which he was engaged.

In 1789-90, Mr Howard again proceeded on a journey, which was the seventh and last, to the continent, to re-examine the prisons and hospitals of Holland, part of Germany, Prussia, and Russia. His plan was to have spent three years abroad. One object of his pursuit, and perhaps the principal one, was to obtain further information respecting the plague, by extending his visits to those parts of the world in which it rages with the greatest virulence, and on some of whose infectious coasts it is supposed to take its rise. As soon as he had resolved to undertake this hazardous journey, he became impressed with the belief that it would be his last; and when he took leave of one and another of his friends, he did it as one whose face they would see no more on this side the grave. These feelings were sadly verified. The benevolent Howard penetrated in his journey into

the deserts of Tartary, to the confines of the Euxine Sea, everywhere examining the prisons and hospitals, and doing all in his power to alleviate the sufferings of the inmates. At Kherson, in the distant region of Russian Tartary, his visits to the infectious hospitals brought upon him the attacks of a severe fever, a species of plague, under which his constitution gave way. Every attention was paid to him by the authorities, but nothing could save his life, which he gave up with pious resignation and hope, on the morning of the 20th January 1790.

Thus died one of the brightest ornaments of English biography ; a person whose name is associated with all that is virtuous and benevolent, and who will be remembered with feelings of admiration and respect for numberless ages in every part of the civilised world.

GEORGE WASHINGTON.

GEORGE WASHINGTON was born in Westmoreland county, in the North American state of Virginia, on the 22d of February 1732, and was great-grandson of John Washington, a gentleman of the south of England, who, about the middle of the seventeenth century, emigrated to this province. The education of young Washington extended only to the reading of English, and some of the more practical branches of mathematics. His inclinations, it seems, led him to adopt a sea-life, and, when very young, he obtained the commission of midshipman in the British navy, but was soon induced to relinquish that service,

by the pressing entreaties of his mother. After this, he entered upon the business of land-surveying, and was remarked for his diligence and expertness, but particularly for a certain gravity and dignity of demeanour, that would have graced riper years and a more elevated station. In this humble sphere, however, his countrymen seem early to have discovered his capacity ; for, when only nineteen years of age, he was appointed one of the adjutants-general of the Virginia militia, with the rank of major. But the opinion of his prudence and capacity was still more conspicuously displayed by his appointment as envoy to the French commandant on the Ohio, to remonstrate against certain encroachments of his troops upon the province of Virginia. Upon his return, he published a very clear and interesting account of this arduous mission, and was immediately appointed lieutenant-colonel of a regiment which had been ordered to proceed against the French, the answer of the commandant not having proved satisfactory. He had not proceeded far, when the command devolved upon him by the death of the colonel, and his services in this campaign obtained the thanks of the legislature of Virginia. Soon after, he resigned his commission, in consequence of certain regulations which he thought derogatory to the officers of the provincial troops, and retired to Mount Vernon, an estate on the banks of the Potomac, to which he had lately succeeded by the death of his brother, purposing to devote himself to the occupations of a country life.

His military bias, however, did not permit him to remain long in retirement. He was invited once more to defend the frontiers of the provinces from the invasions of the French, and his conduct during the whole

expedition was so much approved, that, though only twenty-three years of age, he was soon made commander of all the provincial troops of Virginia. The frontiers being in some measure secured from invasion, he again, in 1758, resigned his commission, amidst the applauses and regrets of his soldiers.

Here might have terminated the military career of George Washington, and he might have passed the remainder of his days in the quietude of rural affairs, but for the unfortunate quarrel which took place between Great Britain and her American possessions. It may here be necessary to explain to our readers the origin and nature of this distressing dispute. For a considerable period Great Britain had possessed a large tract of territory in the North American continent, divided into colonies or separate jurisdictions, the inhabitants of which being chiefly emigrants from this country, were governed by English laws, and guaranteed that civil and religious liberty common to ordinary British subjects. Each of these colonies had a local parliament or assembly of delegates of its own, presided over by a governor appointed by the British ministry. One of the understood regulations in managing these distant countries, was, that they should contribute no taxes to Britain; but it having happened, in the course of time, that the British treasury stood much in need of a supply of money, our ministry and parliament resolved on exacting certain taxes or duties from the American colonists. These taxes, we are informed, would have been freely contributed by the Americans, provided they had been granted the power of sending representatives to Britain to sit in parliament; but this proposal being strenuously refused, through a fear of its leading to further changes

in the British legislature, the result was, that the Americans refused to pay any taxes whatever, and, in a short time, opposed their exaction by force. All men are now of opinion that the British government at this period acted with extreme impropriety ; nevertheless, the nation at the time rushed heedlessly into a war with the colonies, expecting speedily to quell all opposition to the laws. As for the Americans, they sagaciously prepared for the struggle.

In constructing an army for the defence of the provinces, the Americans bestowed the command of the forces on George Washington, of whose military talents and prudence they had already seen many proofs. No man, in any age or country, ever filled a more arduous station than that in which he was now placed. He was called to defend an extensive country just beginning the perilous experiment of self-government, altogether unpractised in war on a great scale, and with no other resources than her spirit, against a nation possessed of all the means, and strong with all the sinews of war, and able, by its command of the ocean, to carry its hostilities against any part of that extensive coast, which had drawn towards it the best part of the wealth and industry of the country. For a considerable period, his troops had no firearms but what they provided themselves ; they had no tents, no magazines, no cavalry, no artillery, and scarcely any ammunition. So provided, or rather unprovided, the best troops in the world would not have been able to do much ; but when we consider the nature and description of the American armies, we must wonder that he was able to keep the field for a single campaign against the well-trained forces of Britain.

The history of the war in America may be summed up

in a few words. Instead of transporting large masses of men capable of crushing in an instant the united force of the colonists, the British ministry despatched small detachments of troops, who were invariably cut up in detail as they marched through the country, and, on some occasions, large bodies of troops were obliged ignominiously to lay down their arms. In this species of inglorious war, which has afforded our American brethren some cause for boasting, Washington was equally conspicuous for his cool determination and courage in the heat of conflict, and his mercy after victory, so as to win the applause of both friend and foe. The situation of the general was, moreover, one of peculiar difficulty. He experienced languor, insubordination, and desertion in his followers ; and it was only after he had the address to induce his countrymen to establish a standing army, on something like regular principles, that success crowned his exertions. It is allowed by all parties that the services of Washington in this grand struggle against oppression were as great as ever were performed by any man to any nation. History is full of far more brilliant exploits ; but it must always be recollected that, in Washington's situation, not to be defeated was victory. In the arrangements on the day of battle, we should discover but a small portion of those happy endowments which gave him an unrivalled ascendancy over the minds of his countrymen ; which enabled him to keep a powerful enemy in awe with fluctuating levies, whose defective constitution forbade the necessary severities of discipline ; which enabled him to awaken sentiments of honour and patriotism in hearts divided by animosities and jealousies. In criticising his military conduct, we must always keep in view his

means ; and if we cannot discover any single achievement of peculiar brilliancy, we shall yet be forced to admire a long series of arduous operations, which display penetration and energy, combined with uniform and unerring sagacity. Although it was simply the redress of grievances relative to taxation which prompted them to take up arms against the mother country, as they began to feel their strength, they aspired to higher views.

The war was commenced on the 14th of June 1774, and, with greater or less vigour, was carried on for about eight years. Two years after its breaking out, on the 4th of July 1776, the colonists declared their independence of the English crown, which was acknowledged by France in 1778, by Holland in 1782, but not by the British parliament till the 30th of November 1783. Yet, in thus securing the blessing of national liberty, the colonists, it seems, were by no means satisfied. They broke out into parties ; disaffection spread on all sides ; and had not the wisdom and patriotism of Washington suggested expedients to allay the ferment and avert the danger, the Union of States would have been dissolved, and national ruin and disgrace the consequence.

Having given liberty to his country, Washington once more retired from public life to his paternal roof, followed by the fervent admiration of his countrymen. Unlike Cromwell, or Napoleon in later times, he had no desire to take advantage of his situation of popularity, and so secure the office, for life, of emperor, king, or protector. He freely renounced all official distinction, thereby offering an example of moral virtue quite unparalleled in the history of modern times, and retaining no other reward for his extraordinary services than his

country's love. The following letter to Lafayette—a distinguished French nobleman who assisted in establishing the independence of the states—written soon after his arrival at Mount Vernon, gives a lively picture of his feelings, and breathes a fine spirit of philosophy :

‘ At length, my dear marquis, I have become a private citizen on the banks of the Potomac, and under the shadow of my own vine and my own fig-tree. Free from the bustle of a camp, and the busy scenes of public life, I am solacing myself with those tranquil enjoyments, of which the soldier, who is ever in pursuit of fame—the statesman, whose watchful days and sleepless nights are spent in devising schemes to promote the welfare of his own, or the ruin of other countries, as if this globe was insufficient for us all ; and the courtier, who is always watching the countenance of his prince, in the hope of catching a gracious smile—can have very little conception. I have not only retired from all public employments, but am retiring within myself, and shall be able to view the solitary walk, and tread the paths of private life, with heartfelt satisfaction. Envious of none, I am determined to be pleased with all, and move gently down the stream of life, until I sleep with my fathers.’

During his retirement, objects of public utility still occupied his thoughts ; and it was not long before he formed, with his characteristic sagacity, a plan of improving the internal navigation of the country. This plan was, to open as high as possible the great eastern rivers, and to connect them, by means of intermediate streams, with the Ohio : and his object in this magnificent undertaking was to draw the states beyond the Alleghany Mountains into a closer connection with those upon the

Atlantic ; and thus, by multiplying their commercial relations, to give stability and unity to those of a political nature. These beneficent schemes of Washington have been fully accomplished. He was soon, however, called upon by a sense of duty into more burdensome labours. The jealousies prevailing among the states threatened again to wreck the newly formed republican government. When at last it became evident to all that some alteration of the general system was indispensable to the preservation of its parts, a convention was held under his auspices ; and the constitution which it formed having been adopted by the greater part of the states, he was, in April 1789, called to the office of first President, by the unanimous voice of the confederation. There is abundance of evidence that he accepted this office of chief magistrate of the United States with the greatest reluctance. He had no ambition of high place ; and, free from all presumption, this truly great man felt diffident of his capacity to administer, in peace, the affairs of a country which, in war, he had saved from ruin. ‘I bade adieu to Mount Vernon, to private life, and domestic felicity,’ says he, in an entry in his diary ; ‘and, with a mind oppressed with more anxious and painful sensations than I have words to express, set out for New York, with the best disposition to render service to my country, but with less hope of answering its expectations.’

The duties of Washington’s civil administration, though far less arduous than those of his military command, yet required much of that fortitude and sagacity which that command so conspicuously displayed. To re-establish credit, and provide for the debts of the Union, when there was every desire to profit by

injustice, and where taxation was both difficult and odious—to give stability and energy to a new government, encountered in its first operations by the contending interests of thirteen separate states—and to preserve the blessings of peace to a rising community, when the misguided feelings of the people would have precipitated a war, were efforts which statesmen are seldom called to make, and which but few would have been equal to perform. In his public conduct, we look in vain for any of those vices which oppose the prosperity of nations and the peace of the world. In choosing the officers of his government, in virtue of the powers committed to him by the constitution, he is universally allowed to have displayed the utmost disinterestedness. No prejudices, no affections, no interests, were seen to interfere with his great duty, to call to the management of a nation's concerns the talents from which a nation has most to hope. His addresses to the people and to Congress—as the parliament of the American states is called—afford indubitable proofs of the purity, as well as the solidity, of his principles; and it is impossible to read them, and to trace them, as exemplified in the whole course of his public career, without admitting ‘that he performed justly, skilfully, and magnanimously, all the offices, both public and private, of peace and war. General Washington survived his retirement from the presidency, which he twice enjoyed, only two years. He died on the 14th of December 1799, of an inflammation in the throat, occasioned by a slight rain to which he had been exposed the preceding day. Soon after the disease commenced, he foresaw he would die; and he met his fate with his accustomed fortitude.

The personal appearance of this lamented statesman

was noble and commanding ; and it has been frequently remarked, that the impression of awe which it was calculated to produce was never effaced by frequency of intercourse. He was reserved in his manners, and unaffectedly modest. He was hospitable, and his establishment expensive, but under exact regulation. He spoke with diffidence ; but his letters to Congress and his written addresses are admirable for clearness and solidity. His personal habits were exceedingly temperate, and the purity of his morals was never questioned. In short, to use the words of Mr Fox, ‘a character of virtues so happily tempered by one another, and so wholly unalloyed with any vices, is hardly to be found in the pages of history.’ By all classes of citizens in the United States, the memory of George Washington is cherished above that of all other patriots, while his name serves as a lasting incitement to the nation to preserve its institutions unimpaired to a distant posterity.

JAMES LACKINGTON.

AMONG the men who have signalised themselves by their enterprise and painstaking industry, are to be numbered several booksellers, whose beginnings were of a humble kind. As an example, none, perhaps, had a more remarkable career than James Lackington, whose life of himself we here abridge. ‘I was born,’ he says, ‘at Wellington, in Somersetshire, on the 31st day of August 1746. My father, George Lackington, was a journeyman shoemaker, and a person of such dissipated habits, that the whole charge of rearing his

family fell upon my mother, a woman of extraordinary industry, and one who had a very hard fate in being allied to a husband who spent upon liquor all that he could earn. Never did I know or hear of a woman who worked and lived so hard as she did to support eleven children; and were I to relate the particulars, they would not gain credit. I shall only observe, that, for many years together, she worked nineteen or twenty hours out of every twenty-four. Out of love to her family, she totally abstained from every kind of liquor, water excepted. Her food was chiefly broth, which was little better than water and oatmeal, and her children did not fare much better. When I reflect on the astonishing hardships and sufferings of so worthy a woman, and her helpless infants, I cannot but denounce, in the strongest possible terms, that abominable love of drinking, by which my father, as is too often the case, neglected his family, and brought upon himself premature death.

‘Before my father had fallen into these disgraceful and expensive habits, I was put for two or three years to a day-school, kept by an old woman, who taught me to read the New Testament; but my career of learning was soon at an end, when my mother became so poor that she could not afford the sum of twopence per week for my schooling. Besides, I was obliged to supply the place of a nurse to several of my brothers and sisters; the consequence of which was, that what little I had learned was presently forgot. Instead of learning to read, &c. it very early became my chief delight to excel in all kinds of boyish mischief, and I soon arrived to be captain and leader of all the boys in the neighbourhood. From this profitless course of life I was rescued at

fourteen years of age, when a Mr Bowden, a respectable shoemaker at Taunton, seven miles from Wellington, having seen and taken a liking to me, proposed taking me as an apprentice, offering, at the same time, to seek no premium, and find me in everything. This offer being accepted by my father, I was immediately bound for seven years to Mr George and Mrs Mary Bowden, as honest and worthy a couple as ever carried on a trade. They carefully attended to their shop six days in the week, and on the Sunday went with their family to a place of public worship.

‘I had been an apprentice about twelve or fifteen months, when, having been led to attend the prelections of a Methodist preacher, a religious fervour overspread my mind, and engrossed all my faculties. The desire I now had of talking about religious mysteries answered a valuable purpose—it caused me to embrace every opportunity to learn to read, so that I could soon read the easy parts of the Bible, and every leisure minute was so employed. In the winter I was obliged to attend my work from six in the morning till ten at night. In the summer half-year I only worked as long as we could see without candle; but, notwithstanding the close attention I was obliged to pay to my trade, yet for a long time I read ten chapters in the Bible every day. I also learned and read many hymns. I had such good eyes, that I often read by the light of the moon, for my master would never permit me to take a candle into the room.

‘In the fourth year of my apprenticeship, my master died, but as I had been bound to my mistress as well as my master, I was, of course, an apprentice still; but after my master’s death I obtained more liberty of conscience, so that I not only went to hear the Methodist sermons,

but was admitted into their society, and I believe they never had a more devout enthusiastical member. For several years I regularly attended every sermon, and all their private meetings; but, alas! my good feelings at length suffered interruption. The election for two members of parliament was strongly contested at Taunton just as I attained my twenty-first year; and being now of age, the six or seven months which I had to serve of my apprenticeship were purchased of my mistress by some friends of two of the contending candidates, so that I was at once set free in the midst of a scene of riot and dissipation. Here I had nearly sunk for ever into meanness, obscurity, and vice; for when the election was over, I had no longer open houses to eat and drink in at free cost; and having refused bribes, I was nearly out of cash. I began the world with an unsuspecting heart, and was tricked out of about three pounds (every shilling I was possessed of) and part of my clothes by some country sharpers. Having one coat and two waistcoats left, I lent my best waistcoat to an acquaintance, who left the town and forgot to return it.'

Lackington seems now to have fallen into dissolute habits, which he afterwards looked back upon with deep regret. However, he continued to work hard, at Bristol and other places, as a journeyman shoemaker, and spent a good deal of spare money on all kinds of books, particularly works of poetry, for which he imbibed a strong attachment. After describing the course of life he led for some time, he thus proceeds:

'I had not long resided a second time with my good Bristol friends, before I renewed my correspondence with an amiable young woman, whom I had formerly known, named Nancy Smith. I informed her that my attachment

to books, together with travelling from place to place, and also my total disregard for money, had prevented me from saving any, and that, while I remained in a single unsettled state, I was never likely to accumulate it. I also pressed her very much to come to Bristol to be married, which she soon complied with ; and married we were, at St Peter's Church, towards the end of the year 1770, near seven years after my first declaring my attachment to her.

‘ We kept our wedding at the house of my friends, the Messrs Jones, and retired to ready-furnished lodgings, which we had before provided, at half-a-crown per week. Our finances were but just sufficient to pay the expenses of the day ; for the next morning, in searching our pockets (which we did not do in a careless manner), we discovered that we had but one halfpenny to begin the world with. It is true we had laid in eatables sufficient for a day or two, in which time we knew we could by our work procure more, which we very cheerfully set about, singing together the following lines of Dr Cotton :

Our portion is not large indeed,
But then how little do we need,
For Nature's calls are few ;
In this the art of living lies—
To want no more than may suffice,
And make that little do.

‘ After having worked on stuff-work in the country, I could not bear the idea of returning to the leather branch, so that I attempted and obtained employment in Bristol ; but better work being required there than in country places, I was obliged to take so much care to please my master, that at first I could not get more

than nine shillings a week, and my wife could get but very little, as she was learning to bind stuff-shoes, and had never been much used to her needle ; so that, what with the expense of ready-furnished lodgings, fire, candles, &c. we had but little left for purchasing provisions. Having, besides, to pay off a debt of near forty shillings, it took two months to make up that sum, during nearly the whole of which time it was extremely severe weather ; and yet we made four shillings and sixpence per week pay for the whole of what we consumed in eating and drinking. Strong beer we had none, nor any other liquor, water excepted ; and instead of tea, or rather coffee, we toasted a piece of bread ; at other times we fried some wheat, which, when boiled in water, made a tolerable substitute for coffee ; and as to animal food, we made use of but little, and that little we boiled and made broth of. But we were quite contented, and never wished for anything that we had not got.

‘ Unfortunately, our health failed under these circumstances, and we were both together taken so ill as to be confined to our bed ; but the good woman of the house, our landlady, came to our room, and did a few trifles for us. We had in cash two shillings and ninepence, half-a-crown of which we had carefully locked up in a box, to be saved as a resource on any extraordinary emergency. This money supported us two or three days, in which time I recovered, without the help of medicine ; but my wife continued ill nearly six months, and was confined to her bed the greatest part of the time. It is impossible for words to describe the keenness of my sensations during this long term ; yet, as to myself, my poverty, and being obliged to live upon water-gruel, gave me not the least uneasiness—it was the necessity of being continually

in the sight and hearing of a beloved object, a young and innocent wife, who lay in a state of acute suffering.

‘Thinking that nothing could relieve my wife but change of air to her native place, I removed from Bristol to Taunton: but here I could not procure so much work as I could do, and, with a view of having a better price for my work, I resolved to visit London; and as I had not money sufficient to bear the expenses of both to town, I left her all the money I could spare, and took a place on the outside of the stage-coach, and the second day arrived at the metropolis, in August 1773, with two shillings and sixpence in my pocket. Next morning I procured a lodging in Whitecross Street, at the house of an acquaintance, and Mr Heath, in Fore Street, supplied me with plenty of work.

‘In a month I saved money sufficient to bring up my wife, and she had a tolerable state of health: of my master I obtained some stuff-shoes for her to bind, and nearly as much as she could do. Having now plenty of work and higher wages, we were tolerably easy in our circumstances, more so than ever we had been, so that we soon procured a few clothes. My wife had all her life before done very well with a cloth cloak, but now I prevailed on her to have one of silk: until this winter, also, I had never found out that I wanted a greatcoat, but now I made that important discovery. At this time we were so lucky as to receive a small legacy of ten pounds, left by one of my wife’s relations, and this assisted us to purchase some household goods; but as we had not sufficient to furnish a room, we worked hard and lived still harder, so that in a short time we had a room furnished with articles of our own. It would not be possible for any one to imagine with what pleasure and

satisfaction we looked round the room and surveyed our property. I believe that Alexander the Great never reflected on his immense acquisitions with half the heart-felt enjoyment which we experienced on this capital attainment. After our room was furnished, as we still enjoyed a better state of health than we did at Bristol and Taunton, and had also more work and higher wages, we often added something or other to our stock of wearing apparel. Nor did I forget the old book-shops, but frequently added an old book to my small collection; and I really have often purchased books with the money that should have been expended in purchasing something to eat. On one occasion, when presented with half-a-crown to buy a joint for our Christmas dinner, I could not resist the temptation of purchasing a copy of Young's *Night Thoughts* with the money, and my wife thought, on reflection, that I had acted wisely; for had I bought a dinner, we should have eaten it to-morrow, and the pleasure would have been soon over; but should we live fifty years longer, we had the *Night Thoughts* to feast upon.

‘Some time in June 1774, as we sat at work in our room, a friend called and informed me that a little shop and parlour were to be let in Featherstone Street, adding, that if I was to take it, I might there get some work as a master. I, without hesitation, told him that I liked the idea, and hinted that I would sell books also. He then asked me how I came to think of selling books. I informed him that until that moment it had never once entered into my thoughts, but that, when he proposed my taking the shop, it instantaneously occurred to my mind, that for several months past I had observed a great increase in a certain old book-shop, and that I was persuaded I

knew as much of old books as the person who kept it. I further observed, that I loved books, and that if I could but be a bookseller, I should then have plenty of books to read, which was the greatest motive I could conceive to induce me to make the attempt. My friend on this assured me that he would get the shop for me, which he did; and, to set me up in style, recommended me to the friends of a person recently deceased, and of whom I purchased a bagful of old books, chiefly divinity, for a guinea.

‘With this stock, and some old scraps of leather, which, together with all my books, were worth about five pounds, I opened shop on Midsummer-day 1774, in Featherstone Street, in the parish of St Luke, and nothing could exceed the pleasure I felt in surveying my little shop with my name over it. At that time Mr Wesley’s people had a sum of money which was kept on purpose to lend out, for three months without interest, to such of their society whose characters were good, and who wanted a temporary relief. To increase my little stock, I borrowed five pounds out of this fund, which was of great service to me. In our new situation we lived in a very frugal manner, often dining on potatoes, and quenching our thirst with water; being absolutely determined, if possible, to make some provision for such dismal times as those of sickness and shortness of work, which we had been frequently involved in before, and could scarcely help expecting not to be our fate again.

‘I lived in this street six months, and in that time increased my stock from five pounds to twenty-five pounds. This immense stock I deemed too valuable to be buried in Featherstone Street, and a shop and parlour being to let in Chiswell Street, No. 46, I took them.

This was at that time, and for fourteen years afterwards, a very dull and obscure situation, as few ever passed through it besides Spitalfields weavers on hanging days, proceeding towards Tyburn ; but still it was much better adapted for business than Featherstone Street. A few weeks after I came into this street, I bade a final adieu to the gentle craft, and converted my little stock of leather and tools into books. My business now increased considerably, many persons buying books from me under the idea of purchasing cheaper than they could at respectable shops ; but a considerable number of these kind of customers, which I had in the beginning, forsook my shop as soon as I began to appear respectable, and keep things in better order. I went on prosperously until some time in September 1775, when I was suddenly taken ill of a dreadful fever ; and eight or ten days after, my wife was seized with the same disorder. I was a considerable time ill, but at length recovered ; my wife, however, sank under the disease, and her loss involved me in the deepest distress.

‘ During the illness of my wife and myself, we were gratuitously and kindly attended by a young lady in the neighbourhood, who, by the misfortunes of her father, had been reduced to keep a school, and work very hard at plain work, by which means she kept her father from want. Now, this old gentleman died shortly afterwards ; and being acquainted with his daughter’s goodness, I concluded that so amiable a daughter was very likely to make a good wife. I also knew that she was immoderately fond of books, and would frequently read until morning, which turn of mind in her was the greatest of all recommendations to me. I embraced the first opportunity, therefore, to make her acquainted with my mind,

and being no strangers to each other, there was no need of a formal courtship ; so I prevailed on her to be my wife, and we were married on the 30th of January 1776.'

Some time previously, Lackington abandoned the Methodist connection. From the period of his second marriage, success attended him in all his business arrangements as a dealer in old books ; and he mentions that nothing did him so much good as the practice of selling only for ready money, by which bad debts were avoided. From buying small quantities of books, he rose to be able to purchase whole libraries, reversions of editions, and to contract with authors for manuscripts of works. This extensive and lucrative business now enabled him to live in a very superior style. 'I discovered,' says he, 'that lodgings in the country were very healthy. The year after, my country lodging was transformed into a country house, and, in another year, the inconveniences attending a stage-coach were remedied by a chariot.' As usual in such cases, the envy of the world pursued Lackington for his supposed extravagance ; but it appears he was strictly honourable in trade, and spent only what was his own. He assures his readers that he found the whole of what he was possessed of in '*small profits, bound by industry, and clasped by economy.*' In 1792, the profits of his business amounted to £5000.

The success of Lackington enabled him, in 1798, to retire from the bookselling business with a competent fortune, the reward of his own ingenuity, industry, and tact, in the way of reprinting books at a cheap rate, leaving a relation at the head of the business. Lackington at first took up his residence in Gloucestershire. Subsequently he purchased two estates in Alvestone, on one of which was a mansion, on which

he made various improvements, and here he took up his abode, keeping a carriage, and living in great style. In his retirement, he again joined himself to the Methodists, for whom he built and endowed different chapels, and, till the last, expressed his great sorrow for the manner in which he had spoken of that body in his published memoirs. He finally retired to Budleigh, Sulterton, in Devonshire; but soon after, his health declined, and he became subject to epileptic fits. At length his decease took place on the 22d of November 1815, in the 70th year of his age.

WILLIAM GIFFORD.

THE rise of James Lackington from the condition of a shoemaker in poor circumstances to be a bookseller on an extensive scale, is not more remarkable than that of William Gifford, originally also a shoemaker, who ultimately attained an eminent place in connection with literature. The biography of Gifford is as instructive as anything we can offer in the way of example. He was born at Ashburton, in Devonshire, in 1756. His father having ruined himself by wild and prodigal habits, died at an early age, leaving a wife and two children wholly unprovided for. Soon the poor widow followed her husband to the grave; and William, the eldest child, not quite thirteen, with a little brother, hardly two years old, became orphans without a relation or friend in the world.

Here was a sufficiently wretched beginning. The youngest child being sent to the parish workhouse, William was taken by his god-father, a selfish sort of person, to be drudged as a ploughboy, though not of a

frame to endure the rough labour of the fields. From this occupation, he was sent on board a fishing-boat at Torbay, and this not answering expectations, he was transferred to a coasting-vessel to act as cabin-boy. The hardships he now endured were less painful than the exclusion from all means of reading and improving his mind. He had been taught to read and write, and the want of books was felt to be a serious privation. An account of the miseries he endured having reached Ashburton, so much public commiseration was aroused, that the god-father was obliged to bring back the boy and put him to school. Here he made such progress in arithmetic as soon to be in advance of other pupils, and though only fifteen years of age, visions began to arise in his mind as to the possibility of being a schoolmaster. His ambitious views in this direction were abruptly checked by his god-father, who, declaring he had done all that could be fairly asked of him, sent him to be an apprentice to his cousin, a shoemaker in respectable circumstances. Let us here say, that there was nothing derogatory in being put to learn the business of shoemaking, but to succeed in this or any other art there must, of course, be a natural desire and aptitude.

In the memoir which Gifford has written of himself, he says : ‘As I hated my new profession with a perfect hatred, I made no progress in it, and was consequently little regarded in the family, of which I sank by degrees into the common drudge. This did not much disgust me, for my spirits were now humbled. I did not, however, quite resign my hope of one day being a schoolmaster, and therefore secretly prosecuted my favourite studies at every interval of leisure. I possessed at this time but one book in the world : it was a treatise on

algebra, given to me by a young woman who had found it in a lodging-house. I considered it as a treasure ; but it was a treasure locked up ; for it supposed the reader to be well acquainted with simple equations, and I knew nothing of the matter. My master's son had purchased Fenning's Introduction ; this was precisely what I wanted—but he carefully concealed it from me, and I was indebted to chance alone for stumbling upon his hiding-place. I sat up for the greatest part of several nights successively, and, before he suspected that his treatise was discovered, had completely mastered it. I could now enter upon my own, and that carried me pretty far into the science. This was not done without difficulty. I had not a farthing on earth, nor a friend to give me one ; pen, ink, and paper, therefore, were for the most part as completely out of my reach as a crown and sceptre. There was indeed a resource ; but the utmost caution and secrecy were necessary in applying to it. I beat out pieces of leather as smooth as possible, and wrote my problems on them with a blunted awl ; for the rest, my memory was tenacious, and I could multiply and divide by it to a great extent.'

No situation, it is obvious, could be more unfavourable for study than this ; and yet we see how the eager student succeeded in triumphing over its disadvantages, contriving to write and calculate even without paper, pens, or ink, by the aid of a piece of leather and a blunted awl. Where there is a strong determination to attain an object, it is generally sufficient of itself to create the means ; and almost any means are sufficient. We mistake in supposing that there is only one way of doing a thing, namely, that in which it is commonly done. Whenever we have to prove it, we find how rich in

resources is Necessity ; and how seldom it is that, in the absence of the ordinary instrument, she has not some new invention to supply its place. This is a truth which studious poverty has often had experience of, and been all the better for experiencing ; for difficulties so encountered and subdued not only whet ingenuity, but strengthen a man's whole intellectual and moral character, and fit him for struggles and achievements in after-life, from which other spirits less hardily trained turn away in despair.

At last, however, Gifford obtained some alleviation of his extreme penury. He had scarcely, he tells us, known poetry even by name, when some verses, composed by one of his acquaintances, tempted him to try what he could do in the same style, and he succeeded in producing a few rhymes. As successive little incidents inspired his humble muse, he produced several more compositions of a similar description, till he had got together about a dozen of them. 'Certainly,' says he, 'nothing on earth was ever so deplorable ;' but such as they were, they procured him not a little fame among his associates, and he began at last to be sometimes invited to repeat them to other circles.

'The repetitions of which I speak,' he continues, 'were always attended with applause, and sometimes with favours more substantial ; little collections were now and then made, and I have received sixpence in an evening. To one who had long lived in the absolute want of money, such a resource seemed a Peruvian mine ; I furnished myself by degrees with paper, &c. and what was of more importance, with books of geometry and of the higher branches of algebra, which I cautiously concealed. Poetry, even at this time, was no amusement of

mine ; it was subservient to other purposes ; and I only had recourse to it when I wanted money for my mathematical pursuits.'

Disappointed in not being allowed to compete for the situation of village schoolmaster, Gifford kept on studying and improving his mind until towards the close of his apprenticeship. A lucky accident brought him into notice. Some verses which he composed having come under the notice of Mr Cookesley, a surgeon, this benevolently disposed individual inquired into the history of the writer, and determined to raise him from obscurity. The plan that occurred to him was, to buy up the remainder of the apprenticeship, and get the youth properly taught some of the higher branches of learning. This double object was accomplished through certain small local subscriptions ; and after about two years' teaching, Gifford was pronounced fit for the university. How his heart bounded with joy at the prospect of advancement which was now opened !

Through the further exertions of Mr Cookesley, he obtained a small office at Oxford, and was there entered at Exeter College. Successful as a student, and aided by Lord Grosvenor, Gifford entered on a prosperous literary career, and became the associate of the most intelligent men of the day. When the *Quarterly Review* was set on foot in 1808, he was appointed editor, a position in which he excelled, alike as regards tact and erudition. Generally honoured and esteemed, and never ashamed of the struggles he had undergone in early life, he drew out existence till his seventy-first year. He died in London on the 31st December 1826.

JAMES WATT.

ALL the inventions and improvements of modern times, if measured by their effects upon the condition of society, sink into insignificance when compared with the extraordinary results which have followed the employment of steam as a mechanical agent. To one individual, the illustrious Watt, the merit and honour of having first rendered it extensively available for that purpose, are pre-eminently due. About the year 1698, Captain Savery began to erect engines for lifting water, somewhat on the principle of the sucking-pump. Not long after he had invented his engine, Thomas Newcomen, an iron-monger, and John Cally, a glazier, both of Dartmouth in Devonshire, began also to direct their attention to the employment of steam as a mechanical power. Their first engine was constructed about the year 1711. This machine still acted on the principle of condensing the steam by means of cold water, and the pressure of the atmosphere on the piston. It was found of great value in pumping water from deep mines ; but the mode of its construction, the great waste of fuel, the continual cooling and heating of the cylinder, and the limited capacities of the atmosphere in impelling the piston downward, all tended to circumscribe its utility. The knowledge of what might be done by steam was in this state, when the subject at last happily attracted the attention of Watt.

James Watt was born at Greenock, a seaport town in the west of Scotland, on the 19th of January 1736. His father followed the profession of a block-maker and

ship-chandler, and was for some time one of the magistrates of Greenock. He was instructed in the elementary branches of education in his native place ; but his health being delicate, as it continued to be during life, his attendance at school was not very regular ; a circumstance which led him to pursue his studies at home, in various branches of useful knowledge. He early attached himself to mechanical and mathematical science, and at the age of eighteen was sent to London, to be an apprentice to a maker of mathematical instruments. Little more than a year elapsed before he was compelled to abandon the metropolis, and return to Scotland, for the sake of his health.

After returning to his native country, he endeavoured to settle in Glasgow as a mathematical instrument maker ; but in this laudable attempt to earn a subsistence, he was violently opposed by some of the trades' corporations ; and it was only by being constituted mathematical instrument maker to the university, and by being installed in apartments within the buildings of the college, that in 1757 he was able to commence his business. It was to the friendship of Adam Smith, the political economist, Black the chemist, and Simson the geometer, that he was mainly indebted for this honourable preferment in his profession. Here he remained six years, and in 1763, when about to enter the married life, he removed from the university to a house in the town, where he commenced the profession of general engineer. He was now well employed in making surveys and estimates for canals, harbours, bridges, and other public works ; but while thus engaged in the details of his profession, his mind was contemplating the possibility of improving the hitherto rudely constructed steam-engine.

His attention had been drawn to this important subject of investigation while yet residing in the college. In the winter of 1763-4, a small model of Newcomen's engine was sent to him by Anderson, the Professor of Natural Philosophy, to be repaired, and fitted for exhibition in the class. In repairing this small model, he was struck with the radical imperfections of the process by which the pressure is given by the atmosphere, and the condensing of the steam in the cylinder; a process calculated to produce only a very slow and unsteady movement. He forthwith entered upon a course of experiments on the properties or powers of steam, the amount of heat to be procured by the combustion of certain quantities of coal, and many other particulars connected with the working of the steam-engine.

One very important fact in this manner became obvious to his apprehension. He discovered that hitherto a much more powerful application of heat than was necessary had been employed in order to increase the constant cooling of the cylinder, by the projection of cold water to condense the steam; in short, that there was a waste of three-fourths of the fuel employed. The two principal things to be effected were, first, to keep the cylinder always as hot as the steam to be admitted into it; and, second, to cool down the condensed steam and the injection water used for condensation to a temperature not exceeding a hundred degrees. It was early in the summer of 1765 that the method of accomplishing these two objects was first matured in his mind. It then occurred to him, that if a communication were opened between a cylinder containing steam and another vessel exhausted of air and other fluids, the steam would immediately rush into the empty vessel, and continue so

to do until an equilibrium was established, and by keeping that vessel very cool, the steam would continue to enter and be condensed. A difficulty still remained to be overcome—How was the condensed steam and injection water, together with the air which must necessarily accompany it, to be withdrawn from the condensing vessel? Watt thought of two methods—one by a long pipe, sunk into the earth, and the other by employing a pump, wrought by the engine itself: the latter was adopted. Thus was laid open the leading principle of a machine the most powerful, the most regular, and the most ingenious ever invented by man. Watt constructed a model, the cylinder of which was nine inches diameter, making several improvements besides those above alluded to. He surrounded the cylinder with a casing, the intervening space being filled with steam to keep the cylinder warm. He also put a cover on the top, causing the piston rod to move through a hole in it, and the piston was rendered air-tight by being lubricated with wax and tallow, instead of water, as formerly.

As thus subsequently improved by Watt, the steam-engine worked no longer by atmospheric pressure on the piston, but by the alternate intrusion and withdrawal of steam—the injection by an opening in the lower part of the cylinder driving the piston upwards, and the injection by an opening in the upper part of the cylinder driving the piston down again, the waste steam in both instances being withdrawn into a side-vessel, and a vacuum formed to allow the play of the piston. Besides these principal improvements on the old steam-engine, he contrived many of a minor nature; among others, a plan by which the boiler supplies itself with water from a cistern, and another by which the speed of the engine

is regulated to any required rate. By these and other remedies, the steam-engine was rendered an agent of power applicable to every description of mechanism wherein wheels required to be turned. In carrying his ideas into execution, Watt encountered, as was to be expected, many difficulties, arising principally from the impossibility of realising theoretical perfection of structure with such materials as human art is obliged to work with; but his ingenuity and perseverance overcame every obstacle.

Besides the various mechanical difficulties which the ingenuity of Watt enabled him to surmount, he had to contend for some time with obstacles of a different nature. He had no pecuniary resources of his own, and was at first without any friend willing to run the risk of the outlay necessary for an experiment on a sufficiently large scale. At last he applied to Dr Roebuck, an ingenious and spirited speculator, who had just established the Carron iron-works, not far from Glasgow, and held also at this time a lease of the extensive coal-works at Kinneil, the property of the Duke of Hamilton. Dr Roebuck agreed to advance the requisite funds, on having two-thirds of the profits made over to him; and upon this Mr Watt took out his first patent in the beginning of the year 1769. An engine, with a cylinder of eighteen inches diameter, was soon after erected at Kinneil; and although, as a first experiment, it was necessarily in some respects of defective construction, its working completely demonstrated the great value of Watt's improvements. But Dr Roebuck, whose undertakings were very numerous and various, in no long time after forming this connection, found himself involved in such pecuniary difficulties as to put it out of his power to

make any further advances in prosecution of its object. On this, Watt applied himself for some years almost entirely to the ordinary work of his profession as a civil engineer; at last, about the year 1774, when all hopes of any further assistance from Dr Roebuck were at an end, he resolved to close with a proposal which had been made to him, that he should remove to Birmingham, and enter into partnership with the eminent hardware manufacturer, Mr Boulton, whose extensive establishments at Soho had already become famous over Europe, and procured for England an unrivalled reputation for the arts there carried on. Accordingly, an arrangement having been made with Dr Roebuck, by which his share of the patent was transferred to Boulton, the firm of Boulton and Watt commenced the business of making steam-engines in the year 1775.

Watt now obtained from parliament an extension of his patent for twenty-five years from this date, in consideration of the acknowledged national importance of his inventions. The first thing which he and his partner did was to erect an engine at Soho, which they invited all persons interested in such machines to inspect. They then proposed to erect similar engines wherever required, on the very liberal principle of receiving as payment for each only one-third of the saving in fuel which it should effect, as compared with one of the old construction. The draining of mines was one of the many applications of the steam-power now at his command, which Watt contemplated, and in course of time accomplished. During the whole twenty-five years, indeed, over which his renewed patent extended, the perfecting of his invention was his chief occupation; and, notwithstanding a delicate state of health, and the

depressing affliction of severe headaches, to which he was extremely subject, he continued, throughout this period, to persevere with unwearied diligence in adding new improvements to the mechanism of the engine, and devising the means of applying it to new purposes of usefulness. He devoted, in particular, the exertions of many years to the contriving of the best methods of making the action of the piston communicate a rotatory motion in various circumstances; and between the years 1781 and 1785 he took out four different patents for inventions having this object in view.

It is gratifying to know, that, unlike many sons of genius, Watt seemed to enjoy a just tribute of honour and reward for his inventions. He lived to see the steam-engine in almost universal use, a circumstance perhaps more pleasing than the praise lavished upon him by learned societies. In 1785, he was elected a Fellow of the Royal Society; the degree of Doctor of Laws was conferred upon him by the university of Glasgow in 1806; and in 1808 he was elected a member of the French Institute. Enjoying the respect of all who knew him, and loaded with honours, he died on the 25th of August 1819, in the eighty-fourth year of his age.

The various wonders which may be accomplished by the steam-engine of Watt have engaged the pens of different imaginative writers. One speaks of it in the following forcible and graphic language: 'In the present perfect state of the engine, it appears a thing almost endowed with intelligence. It regulates with perfect accuracy and uniformity the number of its strokes in a given time, counting or recording them, moreover, to tell how much work it has done, as a clock records the beats of its pendulum; it regulates the quantity of steam

admitted to work, the briskness of the fire, the supply of water to the boiler, the supply of coals to the fire ; it opens and shuts its valves with absolute precision as to time and manner ; it oils its joints ; it takes out any air which may accidentally enter into parts which should be vacuous ; and when anything goes wrong which it cannot of itself rectify, it warns its attendants by ringing a bell : yet, with all these talents and qualities, and even when exerting the power of six hundred horses, it is obedient to the hand of a child. Its aliment is coal, wood, charcoal, or other combustible ; it consumes none while idle ; it never tires, and wants no sleep ; it is not subject to malady when originally well made, and only refuses to work when worn out with age ; it is equally active in all climates, and will do work of any kind ; it is a water-pumper, a miner, a sailor, a cotton-spinner, a weaver, a blacksmith, a miller, &c. : and a small engine in the character of a steam-pony may be seen dragging after it on a railway a hundred tons of merchandise, or a regiment of soldiers, with greater speed than that of our fleetest coaches. It is the king of machines, and a permanent realisation of the genii of eastern fable, whose supernatural powers were occasionally at the command of man.'

To descend from this flight of fancy to sober description, we may state that the steam-engine, as improved by Watt, has been applied as a moving power to at least four very important branches of commerce and the arts. These are—the cotton-spinning machinery and power-looms, steam-boats, locomotive vehicles on railways, and printing-machinery. We now proceed to notice the lives of some of the individuals connected with these surprising improvements in our social system.

HARGREAVES AND ARKWRIGHT.

THE period at which the cotton manufacture was first introduced into Great Britain is conjectured to have been in the early part of the seventeenth century, and there is reason to believe that Manchester was the first seat of the art. As a source of commercial profit, however, this species of trade remained long very insignificant, the only mechanical power employed in the fabrication of the yarn being the common one-thread spinning-wheel. Moreover, for the period of a century at least, the weft, or transverse threads of the web, only, was cotton, it having been found difficult, if not reckoned impossible, owing to the want of proper machinery, to manufacture cotton-warp, that is, the longitudinal threads of the web, of sufficient strength; in place of which, linen yarn, principally from Germany and Ireland, was substituted. The cotton manufacture was then wholly conducted on the system of cottage industry. Every weaver was a master manufacturer; his cottage was his factory, and himself the sole artisan. He provided himself with the weft and warp as he best could, wove them into a web, and disposed of it at market to the highest bidder.

About the year 1760, merchants began to employ weavers to work up the prepared material, and the business of exporting cottons, both to the continent of Europe and to America, began to be conducted on a larger scale than formerly. As the demand for the

manufactured article continued to increase, a greater and greater scarcity of weft was experienced, till, at last, although there were fifty thousand spindles constantly at work in Lancashire alone, each occupying an individual spinner, they were found quite inadequate to supply the quantity of thread required. It may here be mentioned, that already the art of weaving had been considerably improved. The old plan of throwing the shuttle containing the weft, from side to side of the web, by the hand, was superseded, in 1738, by a person of the name of John Kay, a native of Bury, in Lancashire, who invented a new method of casting the shuttle, by an extremely simple and effectual mechanical contrivance, by which one hand of the weaver did the work of both. In 1760, Robert Kay of Bury, a son of John, invented the drop-box, a contrivance by means of which a weaver can at pleasure use any one of three shuttles without stopping, and can thereby produce a fabric of various colours, almost with the same facility that he can weave a common calico.

While the art of weaving was thus considerably improved, the process of carding the cotton-wool was yet clumsy and expensive. At length, this also was remedied. The first improvement on carding was made, as almost all the improvements in the cotton manufacture have been, by a person in humble life—JAMES HARGREAVES, a carpenter at Blackburn in Lancashire. This illiterate, but most ingenious and inventive person, adapted the stock-cards used in the woollen manufacture to the carding of cotton, and greatly improved them. In consequence, a workman was enabled to execute about double the work, and with greater ease, than by means of hand-cards—the only instrument previously in

use. Hargreaves' inventions were soon succeeded by the cylindrical cards, or carding-engine.

But the tedious and expensive method of spinning by the hand was the grand obstacle in the way of the extension and improvement of the manufacture. Insurmountable, however, as this obstacle must at first sight have appeared, it was completely overcome by the unparalleled ingenuity, talent, and perseverance of a few self-taught individuals. Hargreaves seems to have led the way in this career of discovery. In 1767, he had constructed a machine called a *spinning-jenny*, which enabled a spinner to spin *eight* threads with the same facility that one had been previously spun; and the machine was subsequently brought to such perfection as to enable a little girl to work no fewer than from *eighty to one hundred and twenty* spindles! There are few individuals to whom the manufactures of this country are so largely indebted as Hargreaves. It is true that his machine was of very inferior powers to those by which it was immediately followed; but it is not, perhaps, too much to say, that it was one great cause of their being introduced. No sooner had it been seen what a simple mechanical contrivance could effect, than the attention of the most ingenious individuals was immediately drawn to the subject; and the path was opened, by following which so many splendid inventions and discoveries have been made. However much Hargreaves' inventions may have tended to enrich others, to himself they were productive only of bankruptcy and ruin. The moment the intelligence transpired that he had invented a machine by which the spinning of cotton was greatly facilitated, an ignorant and infuriated mob, composed chiefly of persons engaged in that employment, broke

into his house, and destroyed his machine; and some time after, when experience had completely demonstrated the superiority of the jenny, the mob again resorted to violence, and not only broke into Hargreaves' house, but into the houses of most of those who had adopted his machines, which were everywhere proscribed. In consequence of this persecution, Hargreaves removed to Nottingham, where he took out a patent for his invention. But he was not even there allowed to continue in the peaceable enjoyment of his rights. His patent was invaded, and he found it necessary to apply to the courts for redress. A numerous association was in consequence formed to defeat his efforts; and being, owing to a want of success in an attempt to establish himself in business, unable to contend against the wealth and influence of the powerful combination arrayed against him, he was, at much loss, obliged to give up the unequal contest.

The spinning-jenny of the unfortunate Hargreaves was applicable only to the spinning of cotton for weft, being unable to give to yarn that degree of firmness and hardness which is required in the longitudinal threads or warp. But this deficiency was soon after supplied by the invention of the spinning-frame, by RICHARD ARKWRIGHT, a meritorious individual, whose biography is full of interest.

Richard Arkwright was born on the 23d of December 1732, at Preston, in Lancashire. His parents were very poor, and he was the youngest of a family of thirteen children; so that we may suppose the school education he received, if he ever was at school at all, to have been extremely limited. Indeed, but little learning would probably be deemed necessary for the profession to

which he was bred—that of a barber. This business he continued to follow till he was nearly thirty years of age ; and this first period of his history is of course obscure. About the year 1760, or soon after, he gave up his humble trade, and commenced business as an itinerant dealer in hair, collecting the commodity by travelling up and down the country, and then, after he had dressed it, selling it again to the wig-makers, with whom he very soon acquired the character of keeping a better article than any of his competitors. He had obtained possession, too, we are told, of the secret method of dyeing hair, by which he doubtless contrived to augment his profits. It is unfortunate that very little is known of the steps by which he was led to those inventions that raised him to affluence, and have immortalised his name. Residing in a district where a considerable manufacture of linen goods, and of linen and cotton mixed, was carried on, he had ample opportunities of becoming acquainted with the various processes that were then in use ; and being endowed with a most original and inventive genius, and having sagacity to perceive what was likely to prove the most advantageous pursuit in which he could embark, his attention was naturally drawn to the improvement of the method of spinning practised in his neighbourhood. He stated that he accidentally derived the first hint of his great invention from seeing a red-hot iron bar elongated, by being made to pass between rollers ; and though there is no mechanical analogy between that operation and his process of spinning, it is not difficult to imagine, that, by reflecting upon it, and placing the subject in different points of view, it might lead him to his invention. The precise era of the discovery is not known ; but it is most probable that the felicitous idea

of spinning by rollers had occurred to his mind as early as the period when Hargreaves was engaged in the invention of the jenny, or almost immediately after. Not being himself a practical mechanic, Arkwright employed a person of the name of John Kay, a watchmaker at Warrington, to assist him in the preparation of the parts of his machine. Having made some progress towards the completion of his inventions, he applied, in 1767, to Mr Atherton of Liverpool, for pecuniary assistance, to enable him to carry them into effect ; but this gentleman declined embarking his property in what appeared so hazardous a speculation, though he is said to have sent him some workmen to assist in the construction of his machine ; the first model of which was set up in the parlour of the house belonging to the Free Grammar-school at Preston. His inventions being at length brought into a pretty advanced state, Arkwright, accompanied by Kay, and a Mr Smalley of Preston, removed to Nottingham in 1768, in order to avoid the attacks of the same lawless rabble that had driven Hargreaves out of Lancashire. Here his operations were at first greatly fettered by a want of capital. But Mr Strutt of Derby, a gentleman of great mechanical skill, and largely engaged in the stocking manufacture, having seen Arkwright's inventions, and satisfied himself of their extraordinary value, immediately entered, conjointly with his partner, Mr Need, into partnership with him.

Before going further, let us say a word regarding the Mr Strutt here alluded to. Jedediah Strutt was the son of a farmer, and was born in 1726. His father paid little attention to his education ; but, under every disadvantage, he acquired an extensive knowledge of science and literature. He was the first individual who

succeeded in adapting the stocking-frame to the manufacture of *ribbed* stockings. The manufacture of these stockings, which he established at Derby, was conducted on a very large scale—first by himself and his partner, Mr Need, and subsequently by his sons, until about 1805, when they withdrew from this branch of business.

The command of the necessary funds being obtained by means of a connection with Strutt and Need, Arkwright erected his first mill, which was driven by horses, at Nottingham, and took out a patent for spinning by rollers, in 1769. But as the mode of working the machinery by horse-power was found too expensive, he built a second factory, on a much larger scale, at Cromford, in Derbyshire, in 1771, the machinery of which was turned by a water-wheel. Having made several additional discoveries and improvements in the processes of carding, roving, and spinning, he took out a fresh patent for the whole in 1775; and thus completed a series of machinery so various and complicated, yet so admirably combined, and well adapted to produce the intended effect, in its most perfect form, as to excite the astonishment and admiration of every one capable of appreciating the ingenuity displayed, and the difficulties overcome.

The machinery for which Arkwright took out his patents consisted of various parts, his second specification enumerating no fewer than ten different contrivances; but of these, the one that was of by far the greatest importance was a device for drawing out the cotton from a coarse to a finer and harder twisted thread, and so rendering it fit to be used for warp as well as weft. This was most ingeniously managed by the application of a principle which had not yet been introduced in any

other mechanical operation. The cotton was in the first place drawn off from the skewers on which it was fixed, by one pair of rollers, which were made to move at a comparatively slow rate, and which formed it into threads of the first and coarser quality; but at a little distance from the first was placed a second pair of rollers, revolving three, four, or five times as fast, which took it up when it had passed through the others, the effect of which would be to reduce the thread to a degree of fineness so many times greater than that which it originally had. The first pair of rollers might be regarded as the feeders of the second, which could receive no more than the others sent to them; and that, again, could be no more than these others themselves took up from the skewers. As the second pair of rollers, therefore, revolved, we will say, five times for every one revolution of the first pair, or, which is the same thing, required for their consumption in a given time five times the length of thread that the first did, they could obviously only obtain so much length by drawing out the common portion of cotton into thread of five times the original fineness. Nothing could be more beautiful or more effective than this contrivance, which, with an additional provision for giving the proper twist to the thread, constitutes what is called the water-frame or throstle.

Of this part of his machinery, Arkwright particularly claimed the invention as his own. He admitted, with regard to some of the other machines included in his patent, that he was rather their improver than their inventor; and the original spinning-machine for coarse thread, commonly called the spinning-jenny, he frankly attributed in its first conception to Hargreaves. There

were, however, other parties who had an interest as well as Arkwright in these new machines, and who would not allow that any of them were of his invention. As to the principal of them, the water-frame, they alleged that it was in reality the invention of a poor reed-maker of the name of Highs, or Hayes, and that Arkwright had obtained the knowledge of it from his old associate Kay, who had been employed by Highs to assist him in constructing a model of it a short time before Arkwright had sought his acquaintance. Many cotton-spinners, professing to believe this to be the true state of the case, actually used Arkwright's machinery in their factories, notwithstanding the patent by which he had attempted to protect it; and this invasion of his monopoly was carried to such an extent, that at last he found himself obliged to bring actions against no fewer than nine different parties.

It would be needless to enter here into the history of Arkwright's legal contests, which, after various success, he finally lost, and that only because the specifications of his patents were obscure, or mysteriously expressed. The world at large, however, readily acknowledged the originality of his invention, the public doing him that justice which the law denied. Whether he was the actual discoverer of the process, is, we think, of little moment. He made the invention known under all kinds of embarrassments, and at the risk of great loss; and thus, though he were proved to be merely the publisher of the invention, he would, as such, deserve more praise than the pusillanimous beings who laid no claim to the discovery till it was established as successful.

The most marked traits in the character of Arkwright were his wonderful ardour, energy, and perseverance.

He commonly laboured in his multifarious concerns from five o'clock in the morning till nine at night; and when considerably more than fifty years of age—feeling that the defects of his education placed him under great difficulty and inconvenience in conducting his correspondence, and in the general management of his business—he encroached upon his sleep, in order to gain an hour each day to learn English grammar, and another hour to improve his writing and orthography! He was impatient of whatever interfered with his favourite pursuits; and the fact is too strikingly characteristic not to be mentioned, that he separated from his wife not many years after their marriage, because she, being convinced that he would starve his family by scheming when he should have been shaving, broke some of his experimental models of machinery. Arkwright was a severe economist of time; and, that he might not waste a moment, he generally travelled with four horses, and at a very rapid speed. He had extensive concerns in Derbyshire, Lancashire, and Scotland; and his speculative schemes, which were vast and daring, generally proved advantageous. The exertions which he put forth in establishing his machinery were the more remarkable, from being made while in bad health. During the whole of his career, he was labouring under a very severe asthmatic affection. A complication of disorders at length terminated his truly useful life, in 1792, at his works at Cromford, in the sixtieth year of his age. He was high-sheriff of Derbyshire in 1786; and having presented a congratulatory address to His Majesty on his escape from the attempt on his life by Margaret Nicholson, received the honour of knighthood.

The next great improvement in machinery which we

have to mention in connection with the cotton manufacture, was the invention of the *mule-jenny*, so called from its being a combination of the jenny and the spinning-frame. The inventor was SAMUEL CROMPTON, of Bolton-le-moor, who made it in 1775, but did not bring it into use for several years afterwards. The mule-jenny was found to be able to spin yarn to a much finer degree than the frame of Hargreaves, which it consequently superseded; and all sorts of wefts, from the coarsest to the finest, are now spun by it. Crompton received £5000 from parliament for his invention. The working of the mule by the hand was superseded, in 1792, by the application of machinery, by Mr W. Kelly of Glasgow. The last grand discovery in this branch of manufactures was that of the *power-loom*, invented and brought into use in 1787, by the REV. MR CARTWRIGHT, a clergyman in Kent. The power-loom is made of iron, and moved by an engine, which communicates its influence to all the looms in a factory. A boy or girl can with ease attend to two power-looms, and can, by their means, produce six times as much well-woven cloth as could be produced by the best hand-weaver. During late years, the number of power-looms has increased to an enormous amount. By means of these wonderful machines, all kinds of cotton cloths have been lowered to a price so comparatively trifling, that they are now placed within the reach of the very poorest in the community; while, by means of enormous exports of goods, the national resources have been increased to an extent equally conspicuous and gratifying.

GEORGE STEPHENSON.

GEORGE STEPHENSON, the perfecter of the locomotive, had a very humble beginning. His father was Robert Stephenson, fireman to the engine of a coal-pit, at Wylam, about eight miles from Newcastle-on-Tyne. This hard-working man had six children, of whom George was the second, born 9th June 1781. Like other members of the family, George was left without any school instruction, and he had entirely to educate himself. When George was about eight years of age, his father removed to another colliery concern at Dewley Burn, where he filled a similar situation.

Shortly after coming to this place, George was put to work. His first employment was that of herding a few cows, for which light duty he was paid twopence a day. From being a herd-boy, he was promoted to lead horses when ploughing, hoe turnips, and do other farm-work, by which he rose from twopence to fourpence a day. He might have advanced to be a ploughman, but his wish was to be employed about a colliery. Accordingly, he quitted farm-work, and got employment at Dewley Burn to drive a gin-horse, by which change his wages rose to three shillings a week. His next rise was to act as an assistant-fireman to his father. In this occupation, at a wage of a shilling a day, he continued till the coal-pit was wrought out and deserted. The Stephensons now removed to a colliery at Jolly's Close, a few miles

distant, where all got similar employment ; George acting as an assistant-fireman.

After several removes, George was employed at a colliery to attend to the working of a steam-engine to pump water from the mine. It was a post of responsibility, but agreeable to his feelings, as connecting him more closely with machinery. He now began to model miniature steam-engines in clay, and to fix the shapes and proportions in his memory. While so engaged, he was told of engines of a form and character he had never seen, but were described in books. Unfortunately, though now eighteen years of age, he was still ignorant of the alphabet. He clearly saw that unless he learned to read, and otherwise acquire some useful knowledge, he could never advance from his present position.

Having settled in his own mind that he would go to school, cost what it might, George found out a poor teacher, named Robin Cowens, in the village of Walbottle, who agreed to give him lessons in the evening at the rate of threepence a week, a fee which he cheerfully paid. By Robin he was advanced so far as to be able to write his own name, which he did for the first time when he was nineteen years of age. To improve his acquirements, he afterwards, in the winter of 1799, went to an evening-school, kept by Andrew Robertson, a Scotch dominie, in the village of Newburn. Here he was advanced in a regular way to penmanship and arithmetic. But as there was not much time for arithmetical study during the limited school-hours, George got questions in figures set on his slate, which next day he worked out while attending the engine. And that was all the education in the way of schooling he ever got. Very imperfect it was in quality and extent, but

it admitted him within the portals of knowledge, and getting that length, he was enabled to pick up and learn as he went on. The next event in his life was his removal, in 1801, to the Dolly pit, at Callerton, where he received somewhat higher wages, a point of some importance, for at this time the cost of living was very high. Perhaps it was owing to this dearth in food that George fell upon the expedient of devoting his leisure hours in the evening to the making and mending of shoes. Some may think that the craft of shoemaking was quite out of his way, but we have known several instances of shepherds and ploughmen being makers and menders of shoes in a homely style for their families, and therefore the 'gentle craft' is not so very difficult to learn as might be imagined. George Stephenson became a tolerable shoemaker, though he kept chiefly to cobbling or mending. If anything could have spurred him on, it was the desire to sole the shoes of his sweetheart, Fanny Henderson, and of these he is said to have made a 'capital job.' By means of his cobbling, he was able to save a guinea, which is recorded as being the nest-egg of his fortune. Of course, he never could have laid by so much as a guinea, had he, like most of his acquaintances, frequented public-houses and consumed quantities of beer. But no one ever saw him the worse of drink; and while others were soaking in taverns, or amusing themselves with cock-fighting and dog-fighting, he was at home, either trying to increase his sum of knowledge, or applying himself to some useful occupation which was in itself an amusement. His sobriety and industry had their reward. He was enabled to furnish a house decently, and to marry Fanny Henderson. The marriage was celebrated on the 28th November 1802, and the

pair betook themselves to the neat home that had been prepared at Willington Ballast Quay, a place on the Tyne, about six miles from Newcastle.

Settling down as a married man, George continued to devote leisure hours to study or to some handicraft employment. From making and mending shoes, he proceeded to mend clocks, and became known among his neighbours as a wonderfully clever clock-doctor. It is said that he was led into this kind of employment by an accident. His chimney having gone on fire, the neighbours in putting it out deluged the house with water, and damaged the eight-day clock. Handy at machinery, and wishing to save money, George determined to set the clock to rights. He took it to pieces, cleaned it, reorganised it, and made it go as well as ever. There was a triumph! After this, he was often employed as a repairer of clocks, by which he added a little to his income. On 16th December 1803, was born his only son Robert, who lived to be at the head of the railway engineering profession. But before either George or his son could arrive at distinction, there was not a little to be done. As a brakesman, George had charge of the coal-lifting machinery at Willington, and subsequently at Killingworth, and in this department, as well as engineman, he gradually but surely gained the reputation of being an ingenious and trustworthy workman. At Killingworth, which is about seven miles north of Newcastle, he suffered the great misfortune of losing his wife. This sad blow fell upon him in 1804, with his son still an infant.

The next thing we hear of him is, that leaving his child in charge of a neighbour, he went by invitation to superintend an engine at some works near Montrose in

Scotland, which journey, about a hundred and fifty miles, he performed on foot. Disagreeing after a short period with the owners, he trudged back to his home at Killingworth, bringing with him £28 as savings. One of the first things he did after his return was to succour his father, now an aged and blind man, whom, with his old mother, he placed in a comfortable cottage in his own neighbourhood. Again he followed the employment of brakesman at West Moor pit, and was continuing to save, when, in 1807, his small accumulations were in a moment wholly swept away. He was drawn for the militia, and every shilling he had saved was paid away for a substitute. To be thrust back into poverty in so hateful a manner almost upset his philosophy, and he strongly meditated emigrating to America. Fortunately, his spirits revived, and he held on his course.

It says much for Stephenson, that under pinching difficulties he did not only take care of his old parents, but gave his child as good an education as was in his power. The want of learning he had himself acutely felt, and this deficiency, if at all practicable, he wished to avert from his son. In one of his public speeches late in life, he observed : ‘ In the earlier period of my career, when Robert was a little boy, I saw how deficient I was in education, and I made up my mind that he should not labour under the same defect, but that I would put him to a good school, and give him a liberal training. I was, however, a poor man ; and how do you think I managed ? I betook myself to mending my neighbours’ clocks and watches at nights, after my daily labour was done, and thus I procured the means of educating my son.’

In 1810, an opportunity occurred for George Stephenson signalising himself. A badly constructed steam-

engine at Killingworth High Pit could not do its work ; one engineer after another tried to set it to rights, but all failed ; and at last in despair they were glad to let ' Geordie ' try his hand, though ; notwithstanding his reputation for cleverness, they did not expect him to succeed. To their mortification and astonishment, he was perfectly successful. He took the engine to pieces, rearranged it skilfully, and set it to work in the most effectual manner. Besides receiving a present of £10 for this useful service, he was placed on the footing of a regular engineer, and afterwards consulted in cases of defective pumping apparatus.

Although thus rising in public estimation, he still knew his deficiencies, and strove to improve by renewed evening studies. One of his acquaintances, named John Wigham, gave him some useful instructions in branches of arithmetic, of which he had an imperfect knowledge, and the two together, with the aid of books, spent many pleasant evenings in getting an insight into chemistry and other departments of practical science. The year 1812 marked Stephenson's rise to the position of a colliery engineer and planner of machinery for working pits and wheeling off coal. Proprietors and managers began to entertain a high idea of his qualities, which were obviously not those of a pretender.

Various attempts were made by Trevethick and others, from 1802 to 1812, to draw trucks of coal on a rude kind of railway, by means of steam-power, with but moderate success. Reflecting on these efforts, George Stephenson resolved to bring steam traction on railways, if possible, to perfection. In 1814, he was able to begin running his locomotive, called the *Blucher*, on the Killingworth Railway. It was still

only a coal-drag, and at best a clumsy apparatus, but it hauled eight loaded wagons, weighing thirty tons, at about four miles an hour. This was undoubtedly a success; the thing could be done; yet, as the cost of working was about as great as that by horses, little was gained. There must be fresh trials. As by a flash of inspiration, Stephenson saw the leading defect and the method for curing it. The furnace wanted draught, which he gave by sending the waste steam into the chimney; and at once, by increased evolution of steam, the power of the engine was doubled or tripled. In 1815, he had a new locomotive at work, combining this and some minor improvements. Still, there was much to be done to perfect the machine.

At the Killingworth Colliery, Stephenson continued to plan his improvements, and also to advance in general knowledge in the society of his son, who, on leaving school in 1818, was placed as an apprentice to learn practically, underground, the business of a viewer of coal-mines; and in 1820 he went for a session of six months to the university of Edinburgh. The cost of this piece of education was £80, which the father could not well spare; but the prize for skill in mathematics which his son brought home with him at the end of the session was thought to be ample repayment. Acquiring a knowledge of railways, Robert was appointed to proceed to Columbia, South America, to superintend some railway operations.

Pursuing schemes for perfecting the locomotive, George Stephenson's advancement was in no small degree owing to certain services in which he was engaged on the Stockton and Darlington Railway, a concern greatly promoted by Mr Edward Pease, a man of property and

intelligence in the district. The engineering of this railway was given up to Stephenson, and in some respects it became a model for railway works—the gauge of four feet eight and a half inches, which is now usually followed, having here been adopted in a regular manner, in imitation of the old tramways. Already, a manufactory of engines had been set up at Newcastle, in which George Stephenson was a partner, and from this establishment three locomotives were ordered by the directors of the Stockton and Darlington Railway Company ; for in their act of parliament they had taken power to employ steam in the traction of goods and passengers. The opening of this the first public railway took place on 27th September 1825, in presence of an immense concourse of spectators. A local newspaper records the event as follows : ‘ The signal being given, the engine started off with this immense train of carriages, and such was its velocity, that in some parts the speed was frequently twelve miles an hour ; and at that time the number of passengers was counted to be 450, which, together with the coals, merchandise, and carriages, would amount to near 90 tons. The engine, with its load, arrived at Darlington, a distance of $8\frac{3}{4}$ miles, in 65 minutes. The six wagons loaded with coal, intended for Darlington, were then left behind ; and obtaining a fresh supply of water, and arranging the procession to accommodate a band of music and numerous passengers from Darlington, the engine set off again, and arrived at Stockton in 3 hours and 7 minutes, including stoppages, the distance being nearly twelve miles.’ The drawing of about 600 passengers, as there appear to have been in the train, at the rate of four miles an hour, was thought very marvellous. A month later, a regular

passenger-coach called the *Experiment*, was placed on the line; it was drawn by a horse in two hours. The haulage of coal only was effected by the locomotive. It was evident that the making of engines was still in its infancy. Stephenson, at his manufactory, continued to carry out improvements, in which he was assisted by his son, on his return from South America in 1827.

When the project of the Manchester and Liverpool Railway was before parliament in 1825, George Stephenson, in the face of no little browbeating from ignorant and interested opponents, gave good evidence respecting the practicability and safety of drawing passenger-trains with locomotives, though still speaking diffidently as to a speed of more than from fifteen to twenty miles an hour. Parliamentary sanction being obtained, the Liverpool and Manchester Railway Company set to work upon their novel and important undertaking. Stephenson, who had already won a reputation, was appointed engineer, at £1000 a year, and a chief point determined on was, that the line should be as nearly as possible straight between the two towns. In the carrying out of this design, the series of 'engineering difficulties' was first encountered, the overcoming of which has called forth an amount of scientific knowledge, of invention, ingenuity, and mechanical hardihood unprecedented in the history of human labour. Hills were to be pierced or cut through, embankments raised, viaducts built, and four miles of watery and spongy bog, called Chat Moss, converted into a hardened road—all which was successfully effected.

The line being at length completed, the directors offered a prize of £500 for the best locomotive that could be brought forward to compete in running on a

certain day. Stephenson secured this prize by his locomotive, called the *Rocket*, which outstripped all competitors. His success was owing to the introduction of tubes passing from end to end of the boiler, by means of which so great an additional surface was exposed to the radiant heat of the fire, that steam was generated much more rapidly, and a higher temperature maintained at a smaller expenditure of fuel than usual. The tubular boiler was indeed the grand fact of the experiment. Without tubes, steam could never have been produced with the rapidity and heat essential to quick locomotion.

On the 15th of September 1830 the railway was opened. The two great towns, with due regard to the importance of the event, made preparations for it with a spirit and liberality worthy of their wealth and enterprise. Members of the government, and distinguished individuals from various quarters, were invited to be present at the opening. On the memorable day, a train was formed of eight locomotives and twenty-eight carriages, in which were seated the eminent visitors and other persons present on the occasion, to the number of 600. The *Northumbrian*, one of the most powerful of the engines, took the lead, followed by the train, which, as it rolled proudly onwards, impressed all beholders with a grand idea of the energies of art. Soon after, regular traffic commenced, both passengers and goods being conveyed by trains to an extent that surprised every one. That modern marvel, the railway system, was realised.

George Stephenson had now attained an eminent position in the engineering world. He was sought after for various undertakings; the business with which he was connected at Newcastle increased; and, in short.

he was, as far as worldly consideration and circumstances are concerned, a 'made man.' His steadiness, perseverance, and skill had been acknowledged and rewarded. He and his son further perfected the locomotive, which he lived to see running at upwards of forty miles an hour. In 1837, he removed to Tapton Hall, a residence near Chesterfield, and in 1840, he intimated his design of retiring from his more active professional pursuits. He, however, did not subside into idleness or indifference; but gave time to various railway matters, and took pleasure in attending public meetings of mechanics' institutes.

Besides planning several railways after this period, and giving evidence respecting projects of this kind before parliamentary committees, Stephenson several times visited the continent to be consulted respecting lines of railway. At home, in the close of his days, he occupied himself with his birds and other animals, for which he had a great fondness; nor did he take less pleasure in his garden and the rearing of flowers and vegetables. Occasionally, he visited the scenes of his youth among the collieries about Newcastle, at all times taking an interest in the welfare of the workmen, and never feeling ashamed of recognising old acquaintances. Though often invited to the houses of persons of distinction, he acknowledged he had no wish to figure in what he called fine company. It is said that he was beset by projectors of all kinds for the sake of his advice; and that the young likewise besought his counsel as to their proposed professional career, which he gave always cheerfully, except when these youthful aspirants were affectedly dressed, and put on airs contrary to George's notions of propriety. To a young applicant of this stamp,

his candour was probably not very agreeable, but may have been salutary. 'I hope you will excuse me; I am a plain-spoken person, and I am sorry to see a nice-looking, and rather clever young man like you disfigured with that fine-patterned waistcoat, and all these chains and fang-dangs. If I, sir, had bothered my head with such things when at your age, I should not have been where I am now.'

With this love of simplicity, and universally respected, George Stephenson closed his useful career. He died 12th August 1848, aged 67. In the preceding sketch, we have touched merely on the chief incidents in his Biography. His mantle fell on his son, Robert; and how he added lustre to the family name is well known. Besides several great railway undertakings, of which he was engineer, he designed the High-level Bridge across the Tyne at Newcastle, the Conway and Britannia Tubular Bridges in North Wales, and that still more magnificent work of art, the Tubular Bridge, nearly two miles in length, across the St Lawrence at Montreal—in all which works, however, he was ably assisted by subordinates; nor should it be omitted that to Sir William Fairbairn of Manchester is generally imputed the invention of the tubular system of bridge-building. In 1844, Robert Stephenson entered parliament as member for Whitby. This distinguished man survived his father only eleven years. He died in 1859, aged 56, and was honoured with a public funeral and interment in Westminster Abbey.

JOSEPH HAYDN.

JOSEPH HAYDN was the son of a poor wheelwright at Rohrau, in Lower Austria, where he was born in 1732. Without any scientific knowledge of music, his father could play simple airs upon an old harp, to his own and his wife's singing. The natural talent for music which he thus proved himself to possess, was inherited by three sons, including Joseph, all of whom became distinguished musicians, though none attained the great eminence of the subject of this memoir. The inherent gift was first awakened in the mind of Joseph by the tones of his father's harp, which he used to accompany with his voice at a very early period of childhood. Having thus attracted the notice of the schoolmaster of Hamburg, who was related to the family, he was taken by him at six years of age, and regularly instructed, not only in music, but in reading, writing, and Latin grammar. He had begun to play on several instruments, when, the chapel-master of the court and cathedral of Vienna coming to visit the Dean of Hamburg, young Haydn was brought to exhibit before him; and the consequence was, that an offer was made to take him as one of the children of the choir. This he gladly accepted; and for eight years, amidst privations and chastisements, he occupied that humble situation. Here, however, he made a rapid progress in music, and began to exercise his talents as a composer, throwing off, before he was well acquainted even with the rudiments of harmony, a great

number of symphonies, trios, sonatas, and other pieces, in which the dawns of an extraordinary genius were evident. These boyish compositions wanted, as might be expected, the regularity and consistency necessary for perfect success in compound music ; yet there appeared in them a wildness of nature and a luxuriance of fancy which bespoke what he might in after-times produce, when that wildness and luxuriance were corrected by attention and study.

His voice in boyhood was of such clearness and compass, that it became fashionable for the great people of Vienna to go to the cathedral to hear him. At sixteen, when the usual change takes place in the voice, he suddenly became altogether unfit to fulfil this duty. A boyish frolic was then made the pretext by his master for turning him penniless and unrecommended into the street, where he passed a long and dreary November night upon a stone bench. It is a fortunate thing in the world that the mercilessness of one man rarely fails to call forth the benevolence of another, if not of many others. Haydn was found in this forlorn condition by a very indigent musician, who, taking pity on him, afforded him a place at his frugal board, and a corner of a garret without a fireplace, furnished with a bed of sacking, a crippled chair and table, and a decayed harpsichord. Thus, in the midst of penury and suffering, Haydn began a career which was to terminate in the sublimest triumphs of genius. Modest and patient, he was indebted in a great measure to mere industry for his ultimate success. While supporting himself as well as he could by teaching, he studied the theory of his art, in its more complicated and abstract forms, from the works of Matheson, Heinichen, and others ; for the

practice he resorted to the works of Emanuel Bach, a musician to whom he ever afterwards acknowledged the greatest obligations.

The first public employment he acquired was that of organist to the friars of the Misericordia, but the salary was so small, that he was obliged to perform in other places to obtain mere necessaries. At the age of eighteen he composed for a German baron a quartetto, which succeeded ; and from that time he was the author of a number of trios and sonatas, which were often published by the scholars to whom he gave them, without consulting him, or giving him a share in the profit. His reputation by degrees made its way, and in 1760, at the age of twenty-eight, he was just raised above indigence by being appointed *maestro di capella* in second to Prince Esterhazy. He now fulfilled an engagement which he had made in his days of penury, to marry the daughter of the musician who had befriended him. His music, on account of its originality and difficulty, for a time was not generally relished in Germany, and underwent criticism. Some went so far as even to write pamphlets against his works, complaining of them as wild, flighty, and trifling, and as tending to introduce new musical doctrines, which till then had been totally unknown in that country. The only notice that Haydn deigned to take of the scurrility and abuse which was thus heaped upon him, was to publish lessons written in imitation of the several styles of his adversaries. In these their peculiarities were so closely copied, and their extraneous passages so inimitably burlesqued, that they all felt keenly the poignancy of his musical wit, and were silent.

At the death of Werner, his superior in place, Haydn succeeded to the office of chief director of music to

Prince Esterhazy; and he spent thirty years in the obscure Hungarian village belonging to that family, passing only two or three months at Vienna when the prince came to court.

The national music of the Germans is rough, bold, and grand; and although they do not display the softness of the Italians, it is generally acknowledged that in instrumental music, and particularly in that for wind instruments, they have excelled all other nations. The introduction of a more refined manner was reserved for Haydn, who, in originality, pathos, and beautiful air, surpassed all rivalry. Besides numerous pieces for instruments, he composed many operas for the Esterhazy theatre, which were also performed in the theatres of Vienna and Berlin. He also excelled in church music, being only approached in this department by his brother Michael. An oratorio which he composed in 1775, under the title of *Il Ritorno di Tobia*, for the benefit of the widows of musicians, is as favourite a piece in Germany as Handel's *Messiah* is in England. His instrumental *Passione*, in parts, is among the most exquisite of his serious productions.

Although the fame of Haydn excited no small jealousy among his contemporaries, there were two, and these the greatest of them all—namely, Gluck and Mozart—who, with the generosity seldom found wanting in successful talent, warmly declared the friendly and admiring feelings with which they regarded him. In return, he did justice to their merits, and at the death of the latter, was extremely affected, declaring the loss irreparable.

In the service of Prince Esterhazy, Haydn might be considered as in circumstances extremely favourable to the full development of his powers, being at the head

of a great orchestra, and wholly free from the troubles and cares of the world. During that long period, his life was regular, and constantly employed. He rose early in the morning, dressed himself very neatly, and placed himself at a little table by the side of his piano-forte, where he remained with the interruption only of his meals. In the evening he attended rehearsals, or the opera, which was performed four times a week in the prince's palace. Occasionally he amused himself with hunting, and gave the rest of his hours of relaxation to the society of his friends. Living in the utmost retirement, he himself was perhaps the only musical man in Europe who was ignorant of the celebrity of Joseph Haydn.

In 1790, Mr Salomon, who had undertaken to give concerts in London, made proposals to Haydn to assist in conducting these concerts, and to compose pieces for them, offering him £50 for each concert. Haydn accepted the offer, and arrived in England at the age of fifty-nine. He remained in London about twelve months, during which time he composed some of the finest of his works, particularly the magnificent orchestral compositions so well known as the *Twelve Symphonies for Salomon's Concerts*, and the beautiful English canzonets, the poetry of which was written by Mrs Hunter.

While he resided in London, Haydn enjoyed two high gratifications—that of hearing the music of Handel, with which, like most of his countrymen at that time, he was very slightly acquainted, and that of being present at the concerts of ancient music, which were then splendidly patronised, and carried on with great talent. He witnessed the annual celebration in St Paul's Cathedral, which is attended by the children belonging to the

charity schools in the metropolis; and was affected even to tears by the psalms sung in unison by four thousand infantine voices. One of these tunes he jotted down in his memorandum-book; and he used afterwards to say that this simple and natural air gave him the greatest pleasure he had ever received from music.

Haydn returned to England in 1794, having been engaged by Gallini, the manager of the Opera-house, to compose an opera for that theatre on the subject of Orpheus and Eurydice. But there was some difficulty about opening the theatre, and Haydn left England without having finished his opera. During this visit, he had the honour of the diploma of a Doctor of Music conferred on him by the University of Oxford.

After his return from England, he undertook his great work, the *Creation*. While in London, he had been inspired with the most profound admiration for the music of Handel, and especially the *Messiah*; and it is to this feeling that the world is certainly indebted for the *Creation*. He began this work in 1795, when he was sixty-three years of age, and finished it in the beginning of 1798, having been constantly employed upon it for more than two years.

Two years after the appearance of the *Creation*, Haydn produced another work, of a similar form, called the *Seasons*, the words of which are taken from Thomson. This work terminated Haydn's musical career. By the labours of his long life, he had acquired a moderate competency; and after his last return from England, he purchased a small house and garden in one of the suburbs of Vienna, where he resided for the remaining years of his life. Soon after he had taken possession

of his little home, he received a communication from the National Institute of France, informing him that he had been nominated an Associate of that body; an honour by which he was deeply affected. He now began to sink rapidly under the pressure of age and infirmities. He seldom quitted his house and garden; and his enfeebled mind began to be haunted with the double fear of poverty and disease. The visits of his friends would rouse him, and, in conversing with them, he occasionally shewed his former cheerfulness and vivacity. But these gleams were brief and transient, and he sank into his usual state of torpor and depression. His last days were agitated by warlike disturbance. In 1809, the French army led by Napoleon arrived at the gates of Vienna, and the explosion of bombs filled the household of Haydn with terror. On the 26th of May, he caused himself to be placed at his pianoforte, where he sang the national hymn, three times over, with all his remaining energy. It was the song of the swan. While he still sat at the pianoforte, he fell into a state of stupor, and at last expired on the morning of the 31st of May, aged seventy-eight years and two months.

Such was the life of this great, and, it may be added, good man. He was a stranger to every evil and malignant passion, and, indeed, was not much under the influence of passion of any sort. But his disposition was cheerful and gentle, and his heart was brimful of kindly affections. He was friendly and benevolent, open and candid in the expression of his sentiments, always ready to acknowledge and aid the claims of talent in his own art, and, in all his actions, distinguished by the most spotless integrity. His piety was not a mere feeling, capable, as is often the case with worldly men, of being

excited for the moment by circumstances, and dying away when the external influence is removed : it was an active principle, which guided the whole tenor of his life and conduct. His sacred music was exalted by the existence, in his mind, of those devout sentiments which it is the object of sacred music to express.

JOSIAH WEDGWOOD.

THIS ingenious and amiable man, to whom England is largely indebted for many valuable improvements in pottery, was the younger son of a Staffordshire potter, who possessed a small entailed estate. He was born in July 1730, and received from his father a very limited education and a very small patrimony. At an early period of life he applied himself to his father's profession, which was then limited to the production of only the coarsest kinds of earthenware.

The art of fabricating vessels from clay, which was known to the Egyptians and other nations of antiquity, and also to the Chinese (who made the superior kind called *China-ware* so early as the fifth century), was practised at Burslem and some adjacent places in Staffordshire, in, and perhaps before, the reign of Charles II. The possession of extensive fields of clay, and the unfitness of the soil for agriculture, seem to have been the original causes of establishing the earthenware manufacture in this part of England. At the time mentioned the art was in a very rude state, the ware being all extremely clumsy, the colours both coarse and very unskilfully applied, the glazing consisting entirely of

lead ore, or calcined lead, a substance in a high degree pernicious to human life. Some improvements were introduced about the year 1690 by two brothers from Holland, named Ellers, who settled at Burslem, but were obliged soon after to return to their native country, in consequence of the fumes of their furnaces having led to a quarrel with their neighbours. These improvements were not lost sight of among the Staffordshire potters, and another was in time added by a Mr Astbury, who suggested the admixture of calcined flint with clay, while a greater precision was given to the movements of the potter's wheel by an ingenious mechanic named Alsager. The Staffordshire ware continued, nevertheless, at the beginning of the reign of George III. to exhibit little elegance, and to be of very limited utility. The paraphernalia of the tea-table were regularly imported from China. The articles of the dinner-table were generally of metal among the higher ranks, and of wood among the lower. The porcelain which had been produced at Dresden since an early period of the century—the invention of a German chemist named De Böttcher—was then little known in Britain. And almost the only ware of a superior order, besides *China*, which had obtained a footing in the country, was an improved kind which for a few years had been imported from France. It was reserved for Mr Wedgwood first to apply effectually the principles of science and taste to this department of our national manufactures.

The subject of our memoir had entered into business on his own account, in partnership with a Mr Bentley, and, by the assistance of that gentleman, and of an eminent chemist named Chisholme, whom he liberally rewarded, had made considerable improvements in the

composition, form, and colour of the common wares, when, in 1763, he attracted general notice to a species of ware greatly superior in beauty and consistence to any ever before manufactured in England. This new pottery was composed of clay obtained from Devonshire and Dorsetshire, mixed with ground flint, and coated with a vitreous glaze. He called it *Queen's Ware*, in honour of the youthful consort of George III. to whom he presented a service of it, and who became its patroness. By his own taste and that of his partner, a classical elegance was given to this manufacture, which not only rendered it the most beautiful of potteries, but furnished models for a variety of articles in other materials, so as to exert a considerable influence over the national taste. The demand for the Staffordshire ware increased proportionally, and rendered it an important branch of commerce, both domestic and foreign, and tables in the remotest parts of Europe were in time furnished with elegant services of Queen's Ware, of great variety of designs. By varying and repeating his experiments in regard to this pottery, Mr Wedgwood discovered modes of making other kinds of fine ware or porcelain, equally elegant and useful.

Besides his many improvements on articles in porcelain for domestic use, he effected a great advance on works of art of a fanciful nature. The most noted object of this kind which he produced resembled an antique urn, and became known as the Portland vase, from having found a place in the museum of the Duchess of Portland. Wedgwood also attained celebrity by his practical improvements in chemistry and general science. To him the world is indebted for the invention of a pyrometer, or measurer of great

degrees of heat, which, though now superseded by instruments of greater accuracy, displayed a great degree of ingenuity. He had observed that alumina, one of the chief substances employed in his manufacture, became diminished in weight and bulk in proportion to the degree of heat to which it was exposed. There being then no available means of measuring those degrees of heat which exceeded the range of the mercurial thermometer, he applied himself to the construction of an instrument consisting of pieces of clay of determinate sizes, and a graduated apparatus for measuring their bulk with accuracy. One of the pieces was exposed to the heat, and the temperature was judged of by the contraction. An account of the instrument, and of his experiments connected with it, was presented by him, in 1782, to the Royal Society, of which, as well as of the Antiquarian Society, he was a member.

As a proper consequence of talent exerted on useful and grateful objects, Mr Wedgwood soon realised an ample fortune, part of which he spent in the erection of a mansion at no great distance from his manufactory, which he named Etruria, in allusion to the distinction of that part of ancient Italy in the fabrication of earthenware. He had also the satisfaction of witnessing a prodigious increase in the population and wealth of the district he inhabited, of a great share of which he was the author. The *Potteries*, as the district is now called, embracing an area of eight miles by six, even some years ago, contained fourteen manufacturing towns, and 30,000 inhabitants, being the most populous part of the British empire.

In private life, Mr Wedgwood was as estimable as in his public character. The qualities of his mind were

so remarkably well combined and balanced, that no one seemed to predominate in any great degree over the rest, unless, perhaps, we are to except the singular and invaluable power which he possessed, and which had been one of the sources of his success—the power of concentrating his attention, and keeping it steadily fixed, on one object of pursuit. To uncommon firmness of mind and independence of spirit, he joined unwearying benevolence, and the elegance of manners, courtesy, and deference, which suited the elevated society with which he was conversant, and the celebrity and consequence he had attained. In his dealings he was not only strictly correct, but refined and delicate. He so far overcame the disadvantages of the want of education, as to speak and write his native language with purity and precision, and to display a well-furnished and cultivated mind. He died, greatly lamented, at his house of Etruria, in January 1795, leaving two sons, who carried on his business with talent, and to an extent worthy of their descent.

ALEXANDER WILSON.

THIS extraordinary man, who, from being originally an operative weaver, became, by his own unaided exertions, one of the most celebrated ornithologists of his day, was born in Paisley on the 6th of July 1766. His father was a distiller, poor in fortune, though said to have been endowed with an active and sagacious mind. He was so unfortunate as to lose his mother at the early age of ten, and was left without the tender and judicious care

which a mother alone can give. On attaining his thirteenth year, he was bound apprentice for three years to his brother-in-law, to learn the business of a weaver, and, on the expiry of this term, continued to work as a journeyman for four years more.

The employment of a weaver was by no means congenial to the disposition and propensities of the future ornithologist; but as his father, though a highly respectable man in character, was in very indifferent circumstances, young Wilson had no choice left, but was compelled to adopt that which was readiest and most easily attained. It is much to his credit, however, that though he must have felt—indeed, it is certain that he did feel, and that at a very early age—that he was fitted for higher things, he yet diligently laboured at the humble but honourable calling to which his destiny had appointed him, and never allowed such feelings to interrupt his industry. At this period of his life he indulged in a predilection for poetical composition, and wrote several pieces which appeared in the *Glasgow Advertiser*; but in these juvenile attempts he was not very successful, nor was he ever, at any after-period, fortunate in this department of literature, though his poetical productions are certainly not without very considerable merit.

Having continued at the loom, as already said, for four years as a journeyman weaver, at the end of this period he abandoned the business to accompany his brother-in-law, who had commenced as travelling merchant or pedler, in a tour through the eastern districts of Scotland—an employment which, though it could scarcely claim any sort of precedence in point of rank over that which he had left, he yet gladly embraced, as it at once released him from the confinement and dull monotony of his

former occupation, and permitted him to indulge in one of his strongest propensities, which was to ramble over hill and dale, and to enjoy, unfettered and unrestrained, the beauties of his native land. With such a disposition it is not to be wondered at that as a pedler he made much greater progress in the study of nature, and perhaps of man, and in the extending of his ideas, than in the improvement of his fortunes. The acquisition of money was no object with him, and, of course, as it was not sought, it was not found.

At this time Burns was in the zenith of his fame, and Wilson, tempted by his success, resolved to publish his poems. In 1789, he contracted with a printer in Paisley for this purpose, but was obliged to abandon the idea for the time, for want of means to carry it into effect. He, however, published them some time afterwards, with the title of *Poems, Humorous, Satirical, and Serious*, at his own risk, after having in vain endeavoured to procure subscribers, and carried them about with him in his hawking expeditions, but met with little or no success in the sale of them. Though his poetical efforts procured him some reputation, they did nothing in the way of advancing his worldly interests. The volume of poems which he published when he was only twenty-two years of age, went through two small editions in octavo, but without yielding the author any pecuniary advantage. His literary reputation was, nevertheless, considerably increased by the publication of his *Watty and Meg*, a poem in the Scottish dialect, and of such decided merit, that it was universally ascribed to Burns on its first appearance, which was in 1791. It is a droll and satirical description of a husband sorely tried with a scolding wife, and shews that

the author possessed a considerable fund of broad humour and knowledge of character.

Having soon after this embroiled himself in some serious disputes which took place in his native town between the operative weavers and their employers, by writing some severe personal satires on certain individuals of the latter class, he found his residence in Paisley no longer compatible with his comfort or happiness, and therefore determined on proceeding to America. But before taking his departure, he called on those persons whom he had satirised, expressed his sorrow for what he had done, and solicited their forgiveness. This circumstance is a pleasing proof of the generosity of his nature—that which follows, a very striking one of the determination of his character. Although he had resolved on going to America, he did not possess a single shilling wherewith to pay his passage. To supply this desideratum, he instantly abandoned every other pursuit, and for four months laboured with incessant industry at his loom, confining the expense of his living during this time to one shilling in the week. The result of this perseverance and rigid economy was, that at the end of the period named, he found himself in possession of the requisite sum, but nothing more. With this he set out for Portpatrick on foot, crossed to Belfast, and there engaged a passage to America; and he arrived at New York on the 14th of July 1794, with only a few shillings in his pocket, and even these were borrowed from a fellow-passenger.

Up till this period, and indeed for several years after, Wilson exhibited no indications of a genius or even predilection for that particular department of natural

history in which he afterwards acquired so brilliant a name ; but it is said, that immediately after landing in America, and while proceeding from the place of his disembarkation to Newcastle, his attention was strongly excited by the specimens of the feathered inhabitants of the New World which he met with, and that he was particularly delighted with the splendour of the plumage of a redheaded woodpecker, which he shot by the way. Whether or not his genius received on this occasion that bent which afterwards led to such splendid results, it is certain that he always retained a lively recollection of the feelings of surprise and delight with which he for the first time contemplated the beauties of the American woodpecker.

For many years after his arrival in America, Wilson's condition underwent but little improvement. He found there nearly the same difficulties to contend with, and prospects nearly equally cheerless, as those he had left behind him in his native land. The first employment he obtained was with a copperplate printer in Philadelphia, but this he soon relinquished, and betook him to his original trade, weaving. This he again resigned for the pack ; but his success as a pedler was not sufficient to induce him to continue it, and he abandoned it also, and commenced as teacher ; making his first experiment in this laborious and somewhat precarious profession near the town of Frankford, in Pennsylvania. While in this situation, he in a great measure repaired the defects of his early education, by close and unremitting study in various departments of science and knowledge ; and, as has often been the case, by instructing others he taught himself. He afterwards removed to Milestown, where he remained for several years,

adding a little to the limited income arising from his school, by surveying land for farmers.

At the end of this period he applied for and obtained the appointment of schoolmaster of the Union School in the township of Kingessing, within a few miles of Philadelphia; and it is from this period that his history in the pursuit of the bird creation commences, although he yet entertained that branch of natural history only in common with others, and by no means confined his studies to the feathered tribes. His attention was equally engrossed by a host of other animals; and his apartment, as described by himself, had the appearance of Noah's ark, being crowded with opossums, squirrels, snakes, lizards, and other animals. Finding his ignorance of drawing a serious desideratum in his new pursuit, he, by diligence and determination, succeeded in obtaining such a command of the pencil as enabled him to sketch from nature with great fidelity and spirit. It was not, however, till the year 1803 that Wilson conceived the magnificent design of his *American Ornithology*, and even then his ideas on the subject fell very far short of the great work he afterwards achieved. At this period he contemplated little more than 'making a collection of the finest American birds,' as he himself writes to a friend in Paisley. Having mentioned his intention to some of his American friends, they endeavoured to dissuade him from prosecuting it, and with a sincere regard for his interest, pointed out to him the formidable difficulties which he would have to encounter, and which appeared to them insurmountable. But they spoke in vain. Wilson's ardour and enthusiasm was more than a match for their prudence; and trusting to his own resources,

he quietly but resolutely proceeded with his design, although—and it is a curious fact—when he began his stupendous work on *American Ornithology*, he did not know even the names of more than three or four of the American birds. But from this moment he devoted himself with a zeal and energy to the accomplishment of his gigantic enterprise.

In October 1804, with his gun on his shoulder, he made the first of that series of perilous journeys through the wilds of America, which he found it necessary to perform to obtain an accurate and intimate knowledge of the birds of the forest; and amidst privations and hardships which few men but himself would have voluntarily encountered, he completed a journey of twelve hundred miles on foot, through deep snows, boundless forests, deep and dangerous rivers, and over wild and desolate mountains. But the experience of this perilous and painful excursion, instead of damping his ardour, had the effect only of increasing it. In the spring of the following year he had completed drawings of twenty-eight rare birds, and about this time also made an attempt to acquire the art of engraving on copper, thinking, in the devotedness of his enthusiasm, that he might, by diligence and perseverance, soon attain such a proficiency in this art as would enable him to execute the plates for his contemplated work; and he actually completed two: but when he had got this length, he became dissatisfied with the result of his labours, and abandoned the pursuit. At this period, the general aspect of his affairs, and those in particular which related to his undertaking, were exceedingly gloomy. He was without means and without money, and was persevering in a course which his friends thought an

imprudent one, and was therefore without even words of encouragement to cheer him on his way. But neither these disheartening considerations nor any other could deter him from prosecuting his great design. So far from being discouraged by the difficulties which surrounded him, he declared that he would proceed with his plan even if it should cost him his life; and in that noble spirit which belongs to true genius alone, exclaimed: 'I shall at least leave a small beacon to point out where I perished.'

Persevering in his efforts, he was at length able to procure a publisher for his work on American Ornithology, the first volume of which appeared in 1808, and the second in 1810. The subscribers for this splendid book were procured chiefly by himself by means of extensive journeys on foot, or by paddling in a small boat on the Ohio and Mississippi. The boat he called the *Ornithologist*. The account given of his voyage from Pittsburg down the Ohio to Cincinnati, a distance of more than five hundred miles, shews the determination of his character. Some advised him not to undertake the journey alone; but he had made up his mind, and only waited, exploring the woods in the interval, till the ice had left the stream. At length the time arrived for his departure on this inland voyage. His provision consisted of some biscuit and cheese, and a bottle of cordial, given him by a gentleman in Pittsburg: one end of the boat was occupied by his trunk, greatcoat, and gun; and he had a small tin vessel, with which to bale his boat and to drink the water of the Ohio. Thus equipped, he launched into the stream. The weather was calm, and the river like a mirror, except where fragments of ice were floating down. His heart

expanded with delight at the novelty and wildness of the scene. The song of the red-bird in the deep forests on the shore, the smoke of the various sugar-camps rising gently along the mountains, and the little log-huts, which here and there opened from the woods, gave an appearance of life to a landscape which would otherwise have been lonely and still. He could not consent to the slow motion of the river, which flowed two miles and a half an hour ; he therefore stripped himself for the oar, and added three miles and a half to his speed. Our traveller's lodgings by night were less tolerable than his voyage, as he went down the desolate stream. The first night was passed in a log-cabin, fifty-two miles below Pittsburg, where he slept on a heap of straw.

Having reached Cincinnati, he there got a few subscribers for his work, and then proceeded to Louisville, where he sold his boat. He next walked a distance of seventy-two miles to Lexington, whence he travelled to Nashville, exploring on his journey some of the remarkable caverns of Kentucky. He had thoughts of extending his tour to St Louis ; but after considering that it would detain him a month, and add four hundred miles to his journey, without perhaps adding a single subscriber to his list, he gave up the plan, and prepared for a passage through the wilderness towards New Orleans. He was strongly urged not to undertake it, and a thousand alarming representations of hardship and danger were set before him ; but, as usual, he gave fears to the winds, and quietly made preparations for the way. He set out on the 4th of May, on horseback, with a pistol in each pocket, and a fowling-piece belted across his shoulder. During this adventurous journey he suffered severely from the heat of the sun and all the changes of the weather.

His exposure by night and day brought on an illness, which he with difficulty surmounted. He had occasion to travel among the Indians, who, it seems, treated him with great kindness; and, though dreadfully worn out with fatigue, he enjoyed the journey very much. He reached New Orleans on the 6th of June, and shortly embarked in a vessel for New York, and from thence he proceeded to Philadelphia, where he arrived on the 2d of August 1810.

Wilson now applied himself with unwearied industry to the preparation of the third volume of his *Ornithology*. At this time, he says that the number of birds which he had found, and which had not been noticed by any other naturalist, amounted to forty. Between this period and 1812, he made several other journeys throughout the country, partly with the view of promoting the sale of his publication, and partly to procure materials for his study, an object which he never lost sight of—seldom travelling, whatever might be the immediate or ostensible cause of his changing place, without his fowling-piece.

In the year above named, he received a gratifying proof of the estimation in which his merits were beginning to be held. This was his being chosen a member of the Society of Artists of the United States; and in the spring of the following year, he was admitted to the American Philosophical Society in Philadelphia. But this extraordinary man was not destined either to see the completion of his meritorious labours, or to enjoy the triumph of achieving all that he designed. The excessive labour and fatigue of both body and mind to which he had for many years subjected himself, gradually undermined his constitution, and prepared it to yield to the first act of indiscretion to which it should

be exposed ; and this, unfortunately, now very soon occurred.

While sitting one day with a friend, he caught a glimpse from the window of a rare bird, for which he had long been vainly looking out. The instant he saw it, he seized his gun, rushed out of the house in pursuit of it, and, after an arduous chase, during which he swam across a river, succeeded in killing it ; but he succeeded at the expense of his life. He caught a violent cold ; this was followed by dysentery, which carried him off after an illness of ten days' continuance. He died on the morning of the 23d August 1813, in the forty-seventh year of his age, and was buried in the cemetery of the Swedish church, in Southwark, Philadelphia. A plain marble monument, with an inscription, intimating his age, the place and date of his birth, and of his death, marks the place of his sepulture.

Wilson had completed the seventh volume of his *Ornithology* before he died, and was engaged, when seized with his last illness, in collecting materials for the eighth. At this he laboured with an assiduity and unintermitting industry which called forth the remonstrances of his friends. His reply, while it seems to indicate a presentiment of his premature fate, is at the same time characteristic of his extraordinary enthusiasm and diligence. 'Life is short,' he would say on these occasions, 'and nothing can be done without exertion.' Nor is a wish, which he repeatedly expressed to a friend some time before his death, less characteristic of his amiable nature and deep admiration of the works of his Creator. This wish was, that he might be buried *where the birds might sing over his grave.*

His person is described as having been tall and

handsome, rather slender than robust ; his countenance expressive and thoughtful, and his eye intelligent. Unfortunately for himself, the speculation in which he engaged with so much ardour yielded him no remuneration ; for he had committed the serious error of issuing his work on too expensive a scale. From the publication he derived no profits whatever ; and the heavy expenses he had to incur in his journeys, as well as his ordinary outlays, were only paid by the wages he received in the capacity of colourer of his own plates. Of the many active men whose biographies are before the public, there is not, perhaps, one whose life presents such a heroic resolution in the pursuit of science as Wilson. Although this most indefatigable genius did not live to enjoy the reward of his diligence, he certainly anticipated what has come to pass—that his work would always be regarded as a subject of pride by his adopted country, as it certainly is by the country which gave him birth, and would secure a high degree of honour for him whose name it bears.

DR ALEXANDER MURRAY.

THIS eminent linguist and scholar, who, from the lowly condition of a shepherd-boy, raised himself to the situation of Professor of Oriental Languages in the university of Edinburgh, was born on the 22d of October 1775, at a place called Dunkitterick, in Galloway, in the south of Scotland, where his father followed the profession of a shepherd, and reared a large family in humble comfort and respectability. The following is a condensation of the narrative which Murray has written of

himself, and which appeared in the *Literary History of Galloway* :

‘Some time in autumn 1781, my father bought a Catechism for me, and began to teach me the alphabet. As it was too good a book for me to handle at all times, it was generally locked up, and he throughout the winter drew the figures of the letters to me in his *written* hand, on the board of an old wool-card, with the black end of an extinguished heather stem or root snatched from the fire. I soon learned all the alphabet in this form, and became writer as well as reader. I wrote with the board and brand continually. Then the Catechism was presented, and in a month or two I could read the easier parts of it. I daily amused myself with copying, as above, the *printed* letters. In May 1782, he gave me a small Psalm-book, for which I totally abandoned the Catechism ;’ and the next acquisitions were a New Testament and Bible, both being earnestly studied.

‘My father’s whole property was only two or three scores of sheep, and four muirland cows, his reward for herding the farm of Kitterick for Mr Alexander Laidlaw in Clatteranshaws, on the other side of the Dee. He had no debts and no money. We lived in a wild glen, five or six miles from Minigaff, and more from New Galloway. All his sons had been bred shepherds ; he meant to employ me in that line ; and he often blamed me for laziness and uselessness, because I was a bad and negligent herd-boy. The fact was, I was always a weakly child, not unhealthy, but not stout. I was shortsighted, a defect he did not know, and which was often the occasion of blunders when I was sent to look for cattle. I was sedentary, indolent, and given to books, and writing on boards with coals. In 1783, my fame for

wondrous reading and a great memory was the discourse of the whole glen. But my father could not pay the expenses of lodging and wages for me at any school. In harvest 1783, William Cochrane, a brother of my mother, returned from England, where he had made a few hundred pounds as a travelling merchant. He came to visit our family, and being informed of my genius, as they called it, undertook to place me next spring at New Galloway school, and to lodge me in the house of Alexander Cochrane, my grandfather, then alive, and dwelling about a mile from New Galloway. This simple expedient might have occurred to my parents, but I never heard them propose it: the idea of school wages frightened them from employing it. I was brought to New Galloway about the 26th of May 1784, and for a month made a very awkward figure in the school, then taught by Mr William Gordon: he read English well, and had many scholars. Mr Gillespie, who is almost my equal in years, being born in 1775 or 1776, was then reading the rudiments of Latin. My pronunciation of words was laughed at, and my whole speech was a subject of fun. But I soon gained impudence; and before the vacation in August, I often stood dux of the Bible class. I was in the meantime taught to write copies, and use paper and ink.

‘In spring 1785, I was put to assist as a shepherd-boy the rest of the family. I was still attached to reading, printing of words, and getting by heart ballads, of which I procured several. I had seen the ballad of *Chevy Chase* at New Galloway, and was quite enraptured with it. About this time, and for years after, I spent every sixpence that friends or strangers gave me on ballads and penny histories. I carried bundles of these in my

pockets, and read them when sent to look for cattle on the banks of Loch Greanoch, and on the wild hills in its neighbourhood. Those ballads that I liked most were *Chevy Chase*, *Sir James the Rose*, *Jamie and Nancy*, and all heroic and sorrowful ditties. This course of life continued through 1785, 1786, and 1787. In that time I had read several poems, and all the books of piety in the place. My fame for reading and a memory was loud, and several said I was "a living miracle." I puzzled the honest elders of the church with recitals of Scripture, and discourses about Jerusalem, &c. In 1787 and 1788, I borrowed Salmon's *Geographical Grammar*, and L'Estrange's version of Josephus. I got immense benefit from Salmon's book. It gave me an idea of geography and universal history, and I actually recollect at this day almost everything it contains. I learned to copy its maps, but I did not as yet understand the scale.

'As I could read and write, I was engaged by the heads of two families in Kirkowen parish to teach their children. I taught these pupils during the winter of 1787-8. I returned home in March 1788. My fees amounted to about sixteen shillings. Part of this I laid out on books, one of which was the *History of the Twelve Cæsars*, translated from Suetonius; another, Cocker's *Arithmetic*, the plainest of all books, from which in two or three months I learned the four principal rules of arithmetic, and even advanced to the rule of three, with no additional assistance, except the use of an old copy-book of examples, made by some boy at school, and a few verbal directions from my brother Robert, the only one of all my father's sons by his first marriage that remained with us. He was then a cattle-dealer on a small scale. In June 1788, I made a

visit to Minigaff, and got from old John Simpson, a cartwright, and a great reader, the loan of several volumes of Ruddiman's *Weekly or Monthly Magazine* during 1773, 1774, and 1775, and an old, ill-written, and superstitious history of the *Four Monarchies, of the Popes, the Kings of England, &c.* My memory now contained a very large mass of historical facts and ballad poetry, which I repeated with pleasure to myself, and the astonished approbation of the peasants around me. On the 26th of May 1789, my father and his family left Kitterick, and came to herd in a place called Drigmorn, on Palkill Burn, four miles from Minigaff. A prospect now opened of my attending school. I set out by myself, and arrived in Minigaff village. Mr Cramond, the schoolmaster, received me, and I travelled every day from Drigmorn to Minigaff. I read some English, but applied chiefly to writing and arithmetic. In the course of the summer, I ran over Dilworth's *Arithmetic*. But I was not in stout health; and the distance from school was great, and I generally attended only three days in the week. My teacher allowed this. I made the most of these days; I came about an hour before the school met; I pored on my arithmetic, in which I am still a proficient; and I regularly opened and read all the English books, such as the *Spectator*, *World*, &c. brought by the children to school. I seldom joined in any play at the usual hour, but read constantly. It occurred to me that I might get qualified for a merchant's clerk. I therefore cast a sharp look towards the method of book-keeping, and got some idea of its forms by reading Hutton in the school, and by glancing at the books of other scholars. When the vacation came on, I was obliged to quit school. At Martinmas 1789, I was

engaged by three families in the moors of Kells and Minigaff to teach their children.

‘A little before Whitsunday 1790, I returned home to Drigmorn. My father had been engaged to herd in Barncauchla, a farm within two miles of Minigaff village, to which farm we removed on the 26th May 1790. I had now easy access to school, and went regularly. As I now understood writing and accounts, in imitation of other lads in the country I wished to add to these a little French. These were the sum-total of qualifications deemed necessary for a clerk intending to go to the West Indies or America.

‘I had, in 1787 and 1788, often admired and mused on the specimens of the Lord’s Prayer in every language found in Salmon’s *Grammar*. I had read in the magazines and *Spectator* that Homer, Virgil, Milton, Shakespeare, and Newton were the greatest of mankind. I had been early informed that Hebrew was the first language, by some elders and good religious people. In 1789, an old woman, our near neighbour, shewed me her Psalm-book, which was printed with a large type, and had notes on each page. From it, I discovered the Hebrew alphabet, marked letter after letter in the 119th Psalm. I took a copy of these letters, by printing them off in my old way, and kept them.’

Murray’s next effort was to learn French, which he did by means of a French grammar and French New Testament, kindly lent to him by a neighbour. This acquisition led in a similar manner to his teaching himself Latin and Greek. Buying a used copy of Ainsworth’s *Dictionary*, for eighteen-pence, he found in it Greek and Hebrew equivalents of Latin words. With the few books he possessed, he went off to teach some children

who were submitted to his care. This new employment was not alone advantageous as affording a livelihood. It brought him into acquaintanceship with books in English literature of which he had been previously ignorant. All were devoured with the keenest relish. Nothing would now satisfy this young philologist but to make himself master of Hebrew. A grammar of that language was accordingly procured, and soon he read Hebrew with the facility of Greek and Latin. To perfect himself, he attended school in 1792. He would have gone to Glasgow University had he possessed the requisite funds. Depressed by poverty, he, in the autumn of 1792, engaged himself to work with a miller, and at the same time to teach his children.

About the time he went to the miller, he says: 'I had, in my ignorance and ambition, believed myself capable of writing an epic poem. For two years before, or rather from the time that I had met with *Paradise Lost*, sublime poetry was my favourite reading. Homer had encouraged this taste, and my schoolfellow, George Muir, had lent me, in 1791, an edition of *Ossian's Fingal*, which is in many passages a sublime and pathetic performance. I copied *Fingal*, as the book was lent only for four days, and carried the manuscript about with me. I chose Arthur, general of the Britons, for my hero, and during 1792-3 wrote several thousand of blank verses about his achievements. This was my first attempt in blank verse. In 1790, I had purchased *The Grave*, a poem by Blair, and committed it almost entirely to memory.

'I passed the summer of 1793 at home, and in long visits to my friends in Newton-Stewart and other parts. During that summer I began to translate from

Buchanan's poetical works his *Fratres Franciscani*. I made an attempt to obtain the situation of teacher of the school of Mochrum, but the minister of that parish told me that it was promised, and that my youth would be objected to. In 1791, I bought for a trifle a manuscript volume of the lectures of Arnold Drackenburg, a German professor, on the lives and writings of the Roman authors, from Livius Andronicus to Quintilian. This was a learned work, and I resolved to translate and publish it. I remained at home during the winter of 1793-4, and employed myself in that task. My translation was neither elegant nor correct. My taste was improving; but a knowledge of elegant phraseology and correct diction cannot be acquired without some acquaintance with the world, and with the human character in its polished state. The most obscure and uninteresting parts of the *Spectator*, *World*, *Guardian*, and Pope's works, were those that described life and manners. The parts of those works which I then read with rapture were accounts of tragic occurrences of great but unfortunate men, and poetry that addressed the passions.

'Early in 1794, I resolved to go to Dumfries, and present my translation to the booksellers there. As I had doubt respecting the success of a *History of the Latin Writers*, I likewise composed a number of poems, chiefly in the Scottish dialect, and most of them very indifferent. I went to Dumfries in June 1794, and found that neither of the two booksellers there would undertake to publish my translation; but I got a number of subscription papers printed, in order to promote the publication of the poems. I collected, by myself and friends, four or five hundred subscriptions. At

Gatehouse, a merchant there, an old friend, gave me a very curious and large printed copy of the Pentateuch, which had belonged to the celebrated Andrew Melvin, and the *Hebrew Dictionary* of Pagninus, a huge folio. During the visit to Dumfries I was introduced to Robert Burns, who treated me with great kindness; told me, that if I could get out to college without publishing my poems, it would be better, as my taste was young and not formed, and I would be ashamed of my productions when I could write and judge better. I understood this, and resolved to make publication my last resource. In Dumfries I bought six or seven plays of Shakspeare, and never read anything, except Milton, with more rapture and enthusiasm. I had seen his poems before.

‘During this summer, my friend M‘Harg being in Edinburgh, employed as a hawker, or itinerant dealer in tea and other articles, described my situation to James Kinnear, a journeyman printer, a very respectable man, who informed him, that if I could be brought to town, Dr Baird and several other gentlemen would take notice of me. In consequence of this communication, I arrived in Edinburgh at the beginning of November 1794.’

Such is Dr Murray’s singular narrative, on which any comment would but weaken the impression which it is calculated to convey. On his arrival in Edinburgh, he was kindly received by Mr Kinnear. The only letter of introduction which he brought to town was one from Mr Maitland to Dr Baird, who received him with great kindness. Too much praise cannot be paid to these two gentlemen for their generous conduct, particularly as they were strangers to each other, and were actuated solely by the motive of bringing into notice indigent

merit, and opening to a young man of extraordinary promise a wider field for the cultivation of his genius and talents. Nor was Murray unworthy of the patronage of these respectable individuals. On the first day after his arrival in town, he underwent an examination in presence of Dr Baird, Dr Finlayson, and Dr Moodie; and, to use the language of one of his examiners, he read freely, and also explained and analysed accurately, a passage of French, an ode of Horace, a page of Homer, and a Hebrew psalm. In consequence of his uncommon acquirements, not only the direct advantages of the college were procured to him without expense, but such pecuniary aid was extended to him as was necessary for the effectual prosecution of his studies. At the end of two years, he obtained a bursary from the town; and about that time he began to support himself by carrying on private teaching. Dr Baird continued through life his faithful friend and patron.

Dr Murray, after this period, prosecuted a successful career as a man of letters. In 1806, he undertook the ministerial charge of the parish of Urr, in his native county, which he resigned in 1812, on being appointed Professor of Oriental Languages at Edinburgh. Unfortunately, the weakly constitution of this extraordinary genius sunk under the fatigues of his first session, and he died, universally and deeply lamented, April 15, 1813. An elegant monument, commemorative of his life and talents, was some years afterwards erected by subscription near the place of his nativity.

SIR WILLIAM JONES.

THE extraordinary ability and industry displayed by Dr Murray, the subject of the preceding sketch, in the acquirement of languages, meet with few parallels in the annals of British biography : one of the most conspicuous instances of successful exertion in this department of learning, is found in the biography of Sir William Jones, by whom the cultivation of literature was happily united with the most active pursuit of business.

William Jones was born in London, September 20, 1746. He lost his father when only three years of age, and the care of his education fell on his mother, a lady of uncommon endowments. While yet in infancy, he was a miracle of industry, and shewed how strongly he was inspired with the love of knowledge. It is related of him, that, when he was only three or four years of age, if he applied to his mother for information upon any subject, her constant answer to him was : ‘ Read and you will know.’ He thus acquired a passion for books, which only grew in strength with increasing years. At the close of his seventh year, he was placed at the school at Harrow, and in 1764 he entered University College, Oxford. Unlike the majority of youths at these educational establishments, young Jones devoted his whole mind to his studies, his voluntary exertions always exceeding in amount his prescribed task. Such was his activity at school, that one of his masters was wont to say of him, ‘ that if he were left naked and friendless on Salisbury Plain, he would, nevertheless, find the road to

fame and riches.' At this time he was frequently in the habit of devoting whole nights to study, when he would generally take coffee or tea to ward off sleep—a practice, however, which was anything but commendable. He had already, merely to divert his leisure hours, commenced the study of the law; and it is mentioned that he would often amuse and surprise his mother's legal acquaintance, by putting cases to them from an abridgment of Coke's *Institutes*, which he had read and mastered.

The leaning of Jones's genius seems to have been towards the study of languages. It may be very frequently remarked, that individuals who possess the knack of acquiring languages seldom have a genius for anything else; but such does not appear to have been the case with respect to Jones, whose intellect grasped at several of the most important departments of human knowledge and polite learning. While at Oxford, he became desirous of studying the Oriental languages, and he supported a native of Aleppo, at his own expense, to instruct him in the pronunciation of the Arabic tongue. The Greek and Latin languages he was already master of. During the college vacations, he embraced the opportunity of learning riding and fencing, and to read all the best authors in Italian, Spanish, Portuguese, and French. To these accomplishments he found leisure to add dancing, the use of the broadsword, music, and the art of playing on the Welsh harp, the instrument of the country of his forefathers.

While engaged in these various studies, he did not allow himself to rest in the pursuit of the object he had in view, namely, a fellowship, in order to spare his mother the expense of his education. Not succeeding

to his wish in obtaining this object of his ambition, he accepted, in 1765, the office of tutor to Lord Althorp, afterwards Earl Spencer; and, some time afterwards, he obtained a fellowship also. He availed himself of a residence at the German Spa, with his pupil, in 1767, to acquire the German language; and, on his return, translated into French a Persian life of Nadir Shah, brought over in manuscript by the king of Denmark, at the request of the under-secretary of the Duke of Grafton. Another tour to the continent with his pupil and family followed, which occupied his time until 1770, when, his tutorship ceasing, he entered himself as a law student in the Temple. He did not, however, wholly sacrifice literature to his professional pursuits; but, on the appearance of the *Life and Works of Zoroaster*, by Anquetil du Perron, he vindicated the University of Oxford, which had been attacked by that writer, in an able pamphlet in the French language, which he wrote with great elegance. He also published, in 1772, a small collection of poems, chiefly from the poets of Asia, and was the same year elected a fellow of the Royal Society. In 1774, appeared his work *De Poesi Asiatica*, containing commentaries on Asiatic poetry in general, with metrical specimens in Latin and English. He was soon after called to the bar, and, in 1776, made a commissioner of bankrupts. About this time, his correspondence with his pupil evinced the manly spirit of constitutional freedom by which he was actuated; and to his feelings on the American contest he gave vent in a spirited Latin *Ode to Liberty*. In 1778 appeared his translation of the *Orations of Isæus*, with a prefatory discourse, notes and commentary, which, for elegance of style, and profound critical and historical research, excited much admiration.

In the meantime, he rapidly advanced in professional reputation, although his opinion of the American contest stood in the way of his progress to legal honours. The tumults of 1780 induced him to write a pamphlet on the *Legal Mode of Suppressing Riots*; and, in the following winter, he completed a translation from the Arabic of seven poems, of the highest repute. He also wrote the much admired ode, commencing 'What constitutes a State?' These pursuits did not prevent a professional *Essay on the Law of Bailments*. He distinguished himself, in 1782, among the friends to a reform in parliament, and also became a member of the Society for Constitutional Information. The same year he drew up a *Dialogue between a Farmer and a Country Gentleman, on the Principles of Government*; for the publication of which, the Dean of St Asaph, afterwards his brother-in-law, had a bill of indictment preferred against him for sedition. Upon this event, he sent a letter to Lord Kenyon, then chief-justice of Chester, owning himself the author, and defending his positions. On the accession of the Shelburne administration, through the influence of Lord Ashburton, he obtained, what had long been the object of his ambition, the appointment of judge in the Supreme Court of Judicature, Bengal, to which he was nominated in March 1783, and knighted.

Jones (now Sir William) arrived at Calcutta in September 1783. Here a new and extensive field of action opened to him. While filling the office of judge in the Supreme Court of Bengal, and loaded with professional duties of the most laborious nature, he contrived to do more than ever in the study of general literature and philosophy. He had scarcely arrived in the country when he exerted himself to establish a society in

Calcutta on the model of the Royal Society of London, of which he officiated as president as long as he lived, enriching its Transactions every year with the most elaborate and valuable disquisitions in every department of oriental philology and antiquities.

Almost his only time for study now was during the vacation of the courts ; and here is the account, as found among his papers, of how he was accustomed to spend his day during the long vacation in 1785. In the morning, after writing one letter, he read several chapters of the Bible, and then studied Sanscrit grammar and Hindu law ; the afternoon was given to the geography of India, and the evening to Roman history ; when the day was closed by a few games at chess, and the reading of a portion of Ariosto.

Already, however, his health was beginning to break down under the climate, and his eyes had become so weak, that he had been obliged to discontinue writing by candle-light. But nothing could prevent him from pursuing the studies he loved, while any strength remained to him. Even while confined by illness to his couch, he taught himself botany ; and it was during a tour he was advised to take for the recovery of his health, that he wrote his learned *Treatise on the Gods of Greece, Italy, and India*, as if he had actually so disciplined his mind that it adopted labour like this almost for a relaxation.

His health after a time was partially restored ; and we find him again devoting himself both to his professional duties and his private studies, with more zeal and assiduity than ever. When business required his attendance daily in Calcutta, he resided at a country house on the banks of the Ganges, about five miles from the city.

‘To this spot,’ says his amiable and intelligent biographer, Lord Teignmouth, ‘he returned every evening after sunset, and in the morning rose so early as to reach his apartments in town, by walking, at the first appearance of dawn. The intervening period of each morning until the opening of court was regularly allotted and applied to distinct studies.’ At this time his hour of rising used to be between three and four.

During the vacation of the court, he was equally occupied. Writing from Crishna, his vacation residence, in 1787, he says: ‘We are in love with this pastoral cottage; but though these three months are called a vacation, yet I have no vacant hours. It rarely happens that favourite studies are closely connected with the strict discharge of our duty, as mine happily are: even in this cottage I am assisting the court by studying Arabic and Sanscrit, and have now rendered it an impossibility for the Mohammedan or Hindu lawyers to impose upon us with erroneous opinions.’ It was these constant exertions, in truth, that gave its chief enjoyment to his life. In connection with this pursuit, he employed his active mind in planning the compilation of a complete digest of the Hindu and Mohammedan laws, with a view to the better administration of justice among the natives. This work he did not live to finish, but its subsequent accomplishment was entirely owing to his recommendation and primary labours. His object in this instance was to secure a due attention to the rights of the natives; and he shewed himself equally jealous of those of the British inhabitants, by opposing an attempt to supersede the trial by jury.

In 1789, he gave to the world the translation of an Indian drama, entitled *Sacotala, or the Fatal Ring*.

His translation of the *Ordinances of Menu*, the famous Hindu lawgiver, appeared early in 1794, and is very interesting to the student of ancient manners and opinions. This eminent and admirable man, however, at last fell a sacrifice to an undue zeal in the discharge of his duty and his pursuits in literature. In April 1794, he was seized at Calcutta with an inflammation of the liver, which terminated his life on the 27th of the same month, in the forty-eighth year of his age.

It was by a persevering observance of a few simple maxims that Sir William Jones was principally enabled to accomplish what he did. One of these was never to neglect an opportunity of improvement: another was, that whatever had been attained by others was attainable by him, and that, therefore, the real or supposed difficulties of any pursuit formed no reason why he should not engage in it, and with perfect confidence of success. 'It was also,' says his biographer, Lord Teignmouth, 'a fixed principle with him, from which he never voluntarily deviated, not to be deterred, by any difficulties which were surmountable, from prosecuting to a successful termination what he had once deliberately undertaken. But what appears to me,' adds his lordship, 'more particularly to have enabled him to employ his talents so much to his own and the public advantage, was the regular allotment of his time to particular occupations, and a scrupulous adherence to the distribution which he had fixed: hence all his studies were pursued without interruption or confusion.'

Few men have died more regretted, or whose loss to the world of letters was more deeply felt, than Sir William Jones, who, as a linguist, has scarcely ever been surpassed. His acquaintance with the history,

philosophy, laws, religion, science, and manners of nations, was most extensive and profound. As a poet, too, he would probably have risen to great eminence, if his ardour to transplant foreign beauties, and his professional and multifarious pursuits, had allowed him to cultivate his own invention with sufficient intensity. His private character was estimable in all the domestic relations, and he was equally liberal and spirited in public life.

The memory of Sir William Jones received many testimonies of respect both in England and India. The directors of the East India Company voted him a monument in St Paul's Cathedral, and a statue in Bengal; but the most effectual monument of his fame was raised by his widow, who published a splendid edition of his works, in six vols. 4to, 1799, and also, at her own expense, placed a fine marble statue of him, executed by Flaxman, in the antechamber of University College, Oxford.

THOMAS BEWICK.

THIS ingenious individual was born on the 12th August 1753, at Cherry Burn, in the parish of Ovingham, and county of Northumberland, a district celebrated for its coal-mines, as well as for producing several individuals who rose by their abilities from a humble to a distinguished sphere of life. The choice of a profession for young Bewick was determined by the skill in drawing which he very early evinced. Like most boys whose bias towards any pursuit is peculiarly strong, he early indicated the bent of his genius by sketching figures

with chalk on the walls and doors of the houses of his native village—a practice to which Salvator Rosa, one of the most eminent Italian painters, was similarly addicted while a youth, and which in the same manner governed his future course of life. This boyish propensity—which, by the way, is anything but exemplary—was the means of introducing Bewick to his future master, who, pleased with some of his rude sketches, sought him as an apprentice, a proposition which was forthwith assented to by his parents.

At the age of fourteen, young Bewick was thus bound apprentice to Mr Beilby of Newcastle, a respectable engraver, and one who took delight in instructing his pupils and encouraging their rising talents. Bewick pursued the occupation of engraver on copper for a few years, and might, perhaps, have continued to do so for life, had an accidental circumstance not occurred to direct his attention to engraving on wood, a branch of art hitherto little cultivated. Dr Hutton, a celebrated mathematician, at that time a schoolmaster in Newcastle, was preparing his work on Mensuration; and having applied to Mr Beilby to supply copper-plates of the mathematical figures, he was advised to employ wood-engravings or cuts instead. This was agreed to, and Mr Beilby intrusted the execution of them to his apprentice, Bewick. With such beauty and accuracy were they finished, that the young engraver was advised by his master to turn his chief attention to this long-neglected art; and the consequence was a succession of mathematical works illustrated with beautiful diagrams engraved on wood. These figures, consisting chiefly of lines, are not so difficult of execution as those in which shading and a variety of waving and blending lines are

necessary to give effect to the perspective, and present a faithful image of the object to be represented. But the application of the art was not long to be limited to the illustration of mathematical works. Bewick applied himself to pictorial delineation, in which in a short time he attained very considerable proficiency. Here we may pause to describe, in a few words, the peculiar character and value of wood-engraving.

In copper-engraving, the lines or incisions are made in the surface of the plate, and it is from these lines, filled with a thick kind of ink, and by the aid of a press, that the representation is produced on paper. As only one copper-plate can be printed from at a time, and as the process of printing is both tedious and expensive, this description of engraving is ill adapted for the illustration of works where great numbers of copies and lowness of price are required. Both these requisites are secured by wood-engraving. The wood, which is of the fine box-tree, is prepared in blocks of the precise depth of printing-types; and the parts to be printed from being left in relief (not sunk, as in copper), these blocks may be readily fixed up among the types or pages of matter, and printed from along with them, without any additional expense whatever, except the cost of the cuts. The great convenience and cheapness of wood illustrations over copper-plate embellishments, may hence be easily conceived: it is true that wood-engravings cannot be made to equal those of copper or steel in point of beauty and softness, but for all purposes in which utility and not mere elegance is required, wood-cuts are found to be every way suitable. In the present day, wood-engraving has been carried to a high state of perfection, and is of extensive utility for the illustration

of works on the physical sciences and sheets of popular instruction. Much credit is therefore due to the ingenious and persevering Bewick, who revived this important branch of art in England, and gave it that impetus which has since carried it triumphantly forward.

It is to be regretted that in many instances, young persons, from the impulse of vanity or ambition, heedlessly attach themselves to professions connected with the fine arts, in which their natural ability is unable to advance them beyond a humble mediocrity. This is a most fatal step, and ought to be sedulously avoided by all whom friendly advisers consider deficient in those abilities calculated to carry them to an eminent station in the profession to which their wishes may incline them. In most branches of human industry, perseverance leads to skill, and ultimately to fortune; but to excel in the fine arts, such as sculpture, painting, and pictorial engraving, there must be a strong natural aptitude or genius, otherwise the labour will be in vain, or lead to no beneficial results. Fortunately, Bewick possessed this rare attainment in an eminent degree; and to render such a qualification valuable both to himself and to society, he added the virtues of temperance and industry, without which, genius, however brilliant, has little chance of ever attaining its object. After his apprenticeship had expired, Bewick spent a short time in the metropolis, and also paid a visit to Scotland, after which he returned to Newcastle, and became a partner in his master's business. His brother John, who was seven years his junior, became their joint apprentice, and he soon evinced talents and skill equal if not superior to those of his eldest brother. Unfortunately for the arts and for society, of which he was an ornament,

this promising individual was cut off in the thirty-fifth year of his age. Both Thomas and John Bewick possessed a fine taste in appreciating the beauty of natural objects, and it was in the delineation of embellishments of this description on wood that both excelled. The publication of an edition of Gay's Fables afforded the first opportunity for the Bewicks displaying their talents in this higher branch of wood-engraving. The Fables of Gay were published in 1779; and in 1784, the appearance of a new edition of the *Select Fables*, with an entirely new set of cuts by the Bewicks, spread far and wide their reputation, and placed them above competition in the art.

The attractions which the animal kingdom presented to Mr Bewick, continued in force through life, and led him to become a true delineator of nature. He loved to roam among the fields and by-ways, to watch the various attitudes and appearances of animals, both wild and domesticated; thus enriching his stores of knowledge to be elaborated in the course of his professional avocations. He likewise neglected no opportunity of making himself acquainted with those collections of foreign animals which occasionally visited Newcastle in itinerant caravans, and this led to the publication of his work entitled *The History of Quadrupeds*, which, after being carefully prepared, made its appearance in the year 1790. This production was well received by the public at its first appearance, and it has ever since been held in the highest estimation. The pictorial embellishments exhibit every excellence which engravings of animals ought to possess—boldness of design, variety and exactness of attitude, correctness of drawing, and discrimination of general character. A spirit of life and animation pervades every

figure, and thus a lively idea of each animal is conveyed. Short descriptions accompanied the figures. The success of this production, as well as that of several other works in general literature which followed it, induced the publication, in 1797, of the first volume of *The History of British Birds, comprising the Land Birds*, the letter-press being furnished by Mr Beilby. Before the publication of the second volume, on *British Water Birds*, a separation of interests took place, so that its compilation and completion devolved on Mr Bewick alone, with the assistance of a literary friend. The usual excellences of the artist were displayed in this beautiful and valuable work. The drawings are minutely accurate, and express the natural delicacy of feather, down, and foliage in a peculiarly happy manner. A great and unexpected charm belonged to both the histories of Quadrupeds and Birds—this was the profusion of vignettes and tail-pieces with which the volumes are adorned. Many of these happy little embellishments are connected with the manners and habits of the animals near which they are placed; others, again, merely exhibit the fancies and dry humour of the artist, his particular notions of men and things partaking both of the droll and pathetic; as, for instance, a ragged, half-starved sheep picking at a besom—a troop of Savoyards, weary and foot-sore, tugging a poor bear to the next fair—a broken-down soldier trudging, with stern patience, through the slant rain-storm—a poor travelling woman looking wistfully at a mutilated milestone—a blind old beggar, whose faithful dog stops short, with warning whine, on the broken plank that should have crossed the swollen brook—youngsters flying their kite—a disappointed sportsman, who, by shooting a magpie, has lost a woodcock—a horse vainly endeavouring to reach the

water—a bull roaring near a stile which he cannot surmount—a poor mendicant attacked by the rich man's mastiff—and so forth ; all delineatory of scenes true to nature, and calculated to excite pleasing emotions in the mind of the reader. It would be here out of place to particularise the various productions—Poems, Fables, and works on subjects of Natural History—which occupied this ingenious and industrious man during the latter years of his life, and in which he was assisted by a succession of pupils, some of whom have done him great honour, and carried the art of wood-cutting to a state of perfection at which he did not imagine it was capable of arriving.

In his mode of living, Bewick was plain and regular. He practised early rising, indulged in rustic and athletic sports, and accustomed himself to hardships of various kinds. During the severest winter, he kept the windows of his bedroom open, and it was no uncommon occurrence for him to find the snow drifted upon his bedclothes. With a frame originally robust and vigorous, and the employment of various means to secure health, it is not surprising that he enjoyed it in high perfection. The warmth of his attachments, particularly to the various branches of his own family, was very great. During his apprenticeship, his regular custom was to visit his parents once a week. They lived at Cherry Burn, which is fourteen miles distant from Newcastle ; and when the river Tyne happened to be so swollen as to prevent his getting across, he used to shout over to his family, and, after obtaining the required information relative to their health, to return home. With respect to his social habits, it is related of him that he did not mix a great deal with the world, for he not only possessed a singular and most

independent mind, but in his habits he was naturally most persevering and industrious, qualities of character incompatible with the frivolities of society. At his bench he worked and whistled with light-hearted joyous industry, from morn till night, and was a perfect specimen of an old Englishman. During the latter period of his life, he was visited by many persons of taste and literary eminence, who delighted in his conversation, and admired his character and abilities. He died, as he had lived, an upright and truly honest man; and breathed his last, after a short illness, in the bosom of his family, whose society he preferred to every other enjoyment. His death took place at his residence near the Windmill Hills, Gateshead, on Saturday, the 8th of November 1828, in the seventy-sixth year of his age.

SIR THOMAS LAWRENCE.

THIS distinguished painter was born at Bristol in 1769, and was the youngest of a family of sixteen children. His father, who had been bred an attorney, and was afterwards an officer of excise, at the time his son Thomas was born kept an inn in Bristol; but his business here being unsuccessful, he removed, in 1772, to Devizes, in Wiltshire, where he became the landlord of the *Black Bear*. It appears that this removal was by no means advantageous to Thomas's father, who was a man of singular manners, and was fonder of spouting poetry to his guests than attending steadily to the affairs of his household. His mother, we are told, was a person of a very different and more respectable character.

While in this house at the town of Devizes, the wonderful genius of little Thomas began to be manifested. He could recite verses to the admiration of all who heard him, and, by a natural faculty, began to use a pencil, and take likenesses—an accomplishment which induced his parents to present him to all strangers of note who visited their house. A striking instance of this precocity of talent occurred when he was but five years of age, and is thus mentioned: Lord and Lady Kenyon happening to stop for a day at the *Black Bear*, on their way to Bath, Mr Lawrence, the landlord, entered their apartment, and began to expatiate on the genius of his boy, who, ‘although only in his fifth year, could recite them poetry, or speeches, or take their likenesses, whichever they chose.’ Lady Kenyon was, in the first instance, somewhat annoyed by the interruption; but there presently capered into the room, straddling upon a stick, the most lovely and spirited child she had ever beheld. His beautiful face was flushed with exercise, and neither she nor her husband felt inclined to stop his gambols. As soon as the boy could be induced to stand still, Lady Kenyon took him into her arms, and asked him if he could take the likeness of that gentleman, pointing to the future Lord Chief-justice. The child, looking with an impatient earnestness at Lord Kenyon, exclaimed: ‘Yes, that I can, and very like too.’ Whilst materials were sent for, the child resumed his play; but when all was prepared, throwing his little legs from over his stick, he was lifted on the table, and seated in an arm-chair, from which height he took Lord Kenyon’s likeness, with a rapidity, a spirit, and a correctness truly astonishing. That done, he was impatient to be gone; but his lordship, coaxing him, asked if he could take the likeness of

the lady. The boy exclaimed: 'Yes, that I can, if she will only turn her side to me, for her face is not straight.' This produced a burst of laughter; for Lady Kenyon, by an accident, had a slight curvature of the nose. The child took the profile. Twenty-five years after, an old friend of Lady Kenyon saw this portrait, and could distinctly trace a resemblance to what her ladyship had been at the period when it was taken.

At the age of six years, little Lawrence was sent to school, where he remained only two years; and this was all the education he ever received, except a few lessons afterwards in Latin and French from a dissenting clergyman. From his sixth to his tenth year, he continued to take likenesses occasionally, and to be exhibited as a prodigy by his partial father, who seems to have in some measure lived on the profits of his son's ingenious exertions. At the age of ten, the young artist commenced, of his own accord, to execute original compositions of a higher class. He painted several Scripture pieces; and his fame in this branch of the arts also spreading, he was invited by gentlemen to visit their galleries of paintings from the eminent masters.

The erratic efforts of the rising artist did not save his father from ruin. Old Lawrence failed in his business at Devizes, and removed to Bath, where he placed his son a pupil with Mr Hoare, a crayon-painter of taste and fancy. Under this excellent master he acquired those qualities of grace, delicacy, and spirit which afterwards distinguished his productions. While at Bath, and only thirteen years of age, he made a drawing of the Transfiguration, which having been sent to the exhibition of the Society of Arts, was rewarded by the society conferring upon him the great silver palette and five

guineas, in approbation of his abilities. During his residence at this place of fashionable resort, he was taken by his father on excursions to Oxford, Salisbury, and other towns, where he obtained considerable occupation for his pencil. It is said he generally received four sitters every day, giving to each half an hour, and half an hour longer from memory. When about sixteen years of age, he was strongly inclined to make the stage his profession, and he actually performed at the Bath theatre ; but from this line of life he was happily diverted, and turned to better pursuits. He remained at Bath about six years ; and during the whole of this period, young as he was, he was the sole support of his father and the other members of the family. At length, his father, either thinking that his labours might be made still more profitable in a wider field, or perhaps prevailed upon by the remonstrances of his son, determined to remove to London.

It was in the early part of the year 1787, when in his eighteenth year, that young Lawrence was brought to the metropolis, to commence that career which terminated so triumphantly. He was now in the midst of institutions established for affording instruction in his art, and this was a most fortunate circumstance for him at this crisis in his life. It appears that, on the arrival of the family in London, his father immediately hired a handsome suite of apartments in Leicester Square, in the immediate neighbourhood of the rooms of Sir Joshua Reynolds, to whom he was anxious his son should be introduced. On applying to this great painter for this purpose, an interview was appointed ; and young Lawrence, with the sensibility inseparable from worth and talents, was taken to the painting-room of this distinguished head of the

English school of art. Sir Joshua was forcibly struck by the beauty, fine figure, and graceful manner of the lad, and received him with an attention and a benignity that dissipated his apprehensions, and restored him to self-possession. The performance he brought with him was examined, and partially approved of; and having given the young painter several valuable directions, Sir Joshua kindly told him he was welcome whenever he chose to call. Lawrence listened to his remarks with deference, and felt grateful for the attention bestowed upon him. Seeing now the folly of his father in wishing to set him up as a master of the art of painting, he very soon removed from Leicester Square to less splendid lodgings in Tavistock Street, Covent Garden, and was soon after admitted a student at the Royal Academy.

From this period may be dated the rapid rise of Mr Lawrence into notice in the higher circles of society in the metropolis. Every year he attained a greater proficiency in his art; but though commissions for portraits to a considerable extent flowed in upon him, his pecuniary affairs were far from affluent. The drafts upon his purse, in behalf of his parents, were absorbing; but although this burden long held him down, he was never heard to murmur or complain. In 1791, he was elected an Associate of the Royal Academy; in the following year, on the death of his former patron, Sir Joshua Reynolds, he was appointed his successor in the offices of painter to His Majesty and to the Dilettanti Society. From this time his reputation grew steadily, till he came to be generally considered the first portrait-painter of the age. Every year he produced portraits of eminent characters, and his works included pictures of most of the crowned heads in Europe. In April 1815, the Prince

Regent was pleased to confer the honour of knighthood on Mr Lawrence. At the request of the prince, he was induced to proceed to Aix-la-Chapelle, to take likenesses of the most distinguished statesmen who had there met for diplomatic purposes ; having executed this mission, to proceed to Vienna, and from thence to Rome, where he had an opportunity of contemplating the great masterpieces of ancient art. During the whole of Sir Thomas's residence on the continent, he was entertained in the palaces of the various sovereigns with marked distinction ; and the propriety and elegance of his deportment made an impression highly favourable to his character as an English artist and gentleman. He returned to England in 1820 ; but before his arrival, on the death of Mr West, he was elected, without opposition, to succeed him as President of the Royal Academy. This distinguished office he continued to hold till his lamented death. This event took place in a sudden manner on the 7th of January 1830, and was ascertained to have been caused by an extensive and complicated ossification of the heart—a disease which has prematurely cut off many men of genius.

It would be useless here to say anything of the character of this eminent individual as a painter. His works, and engravings from them, are everywhere to be met with, and their superiority may be discovered even by the most ignorant, from their extraordinary delicacy of touch and gracefulness. He was one of the few eminent English painters who attained a proficiency in their profession before visiting Italy, or without studying the old masters—a circumstance attributable to his wonderful native genius and good taste. Although he never had to contend with those difficulties at the outset which

have frequently beset the early career of men who arrived at distinction, his biography presents us with the instructive example of a man of genius successfully struggling to support a father's family, and who was neither intoxicated with applause, nor abandoned to that recklessness of conduct which is too commonly found the concomitant of genius, especially when not strengthened by a good education in youth.

THOMAS TELFORD.

THOMAS TELFORD was born in the year 1757, in the parish of Westerkirk, in the pastoral vale of Eskdale, a district in the county of Dumfries, in Scotland. His parents occupied a station in the humble walks of life, which, however, they filled with becoming respectability. The outset in life of their son Thomas corresponded to their situation in society, and was strikingly humble and obscure in comparison with its close. He began the world as a working stone-mason in his native parish, and for a long time was only remarkable for the neatness with which he cut the letters upon those frail sepulchral memorials which 'teach the rustic moralist to die.' His occupation, fortunately, afforded a greater number of leisure hours than what are usually allowed by such laborious employments, and these young Telford turned to the utmost advantage in his power. Having previously acquired the elements of learning, he spent all his spare time in poring over such volumes as fell within his reach, with no better light in general than what was afforded by the cottage fire. Under these circumstances,

the powers of his mind took a direction not uncommon among rustic youths; he became a noted rhymster in the homely style of Ramsay and Fergusson, and, while still a very young man, contributed verses to Ruddiman's *Weekly Magazine*, under the unpretending signature of 'Eskdale Tam.' In one of these compositions, which was addressed to Burns, he sketched his own character, and hinted his own ultimate fate—

Nor pass the tentie curious lad,
 Who o'er the ingle hangs his head,
 And begs of neighbours books to read;
 For hence arise
 Thy country's sons, who far are spread,
 Baith bold and wise.

Though Mr Telford afterwards abandoned the thriftless trade of versifying, he is said to have retained through life a strong 'frater-feeling' for the corps, which he shewed in a particular manner on the death of Burns, in exertions for the benefit of his family.

Having completed his apprenticeship as a stonemason in his native place, he repaired to Edinburgh, where he found employment, and continued, with unremitting application, to study the principles of architecture, agreeably to the rules of science. Here he remained until the year 1782, when, having made a considerable proficiency, he left the Scottish capital, and went to London under the patronage of Sir William Pulteney (originally Johnstone) and the family of Pasley, who were natives of the parish of Westerkirk.

Telford now found himself in a scene which presented scope for the efforts of his talents and industry. Fortunately, he did not long remain unnoticed or unemployed. His progress was not rapid, but it was steady, and

always advancing ; and every opportunity of displaying his taste, science, and genius, extended his fame, and paved the way to new enterprises and acquisitions. The first public employment in which he was engaged was that of superintending some works belonging to government in Portsmouth dockyard. The duties of this undertaking were discharged with so much fidelity and care as to give complete satisfaction to the commissioners, and to insure the future exercise of his talents and services. Hence, in 1787, he was appointed surveyor of the public works in the rich and extensive county of Salop, and this situation he retained till his death.

A detail of the steps by which Mr Telford subsequently placed himself at the head of the profession of engineering, would most likely only tire our readers. It is allowed on all hands that his elevation was owing solely to his consummate ability and persevering industry, unless we are to allow a share in the process to the singular candour and integrity which marked every step in his career. His works are so numerous all over the island, that there is hardly a county in England, Wales, or Scotland in which they may not be pointed out. The Menai and Conway bridges, the Caledonian Canal, the St Katharine's Docks, the Holyhead roads and bridges, the Highland roads and bridges, the Chirk and Pontcysulte aqueducts, the canals in Salop, and great works in that county, are some of the traits of his genius which occur to us, and which will immortalise the name of Thomas Telford.

Nor was the British empire alone benefited by Mr Telford's genius. In the year 1808, he was employed by the Swedish government to survey the ground, and lay out an inland navigation through the central parts of that

kingdom. The design of this undertaking was to connect the great fresh-water lakes, and to form a direct communication by water between the North Sea and the Baltic. This gigantic undertaking he fully accomplished, with the assistance of experienced British workmen.

Mr Telford's fame as a civil engineer has been principally spread in Great Britain by his great work, the Dublin road from London to Holyhead, including the Menai and Conway bridges. Though now eclipsed as a feat of engineering by the tubular bridge of Stephenson over the same strait, the Menai Suspension Bridge of Telford remains a wonder of art, and involved an immense exercise of ingenuity. Before its erection, the communication was carried on by means of ferry-boats, and was therefore subject to delays, and even dangers. The bridge is at a point near the town of Bangor, from near which its appearance is strikingly grand. The first three-masted vessel passed under the bridge in 1826. Her topmasts were nearly as high as a frigate; but they cleared 12 feet and a half below the centre of the roadway. This stupendous undertaking occasioned Mr Telford more intense thought than any other of his works: he told a friend that his state of anxiety for a short time previous to the opening of the bridge was so extreme, that he had but little sound sleep, and that a much longer continuance of that condition of mind must have undermined his health.

The Caledonian Canal is another of Mr Telford's splendid works, in constructing every part of which, though prodigious difficulties were to be surmounted, he was successful. But even this great work does not redound so much to his credit as the roads throughout the same district. That from Inverness to the county of

Sutherland, and through Caithness, made not only, so far as respects its construction, but its direction, under Mr Telford's orders, is superior, in point of line and smoothness, to any part of the road of equal continuous length between London and Inverness. This is a remarkable fact, which, from the great difficulties he had to overcome in passing through a rugged, hilly, and mountainous district, incontrovertibly establishes his great skill in the engineering department, as well as in the construction of great public communications.

Mr Telford was not more remarkable for his great professional abilities than for his sterling worth in private life. His easiness of access, and the playfulness of his disposition, even to the close of life, endeared him to a numerous circle of friends, including all the most distinguished men of his time. He was the patron of merit in others, wherever it was to be found; and he was the means of raising many deserving individuals from obscurity to situations where their talents were seen and soon appreciated. Up to the last period of his life, he was fond of young men and of their company, provided they delighted in learning. His punctuality was universal, a very rare quality in men of genius. In the course of his busy life he taught himself Latin, French, and German. He understood algebra well, but thought that it led too much to abstraction, and too little to practice. Mathematical investigation he also held rather cheaply, and always, when practicable, resorted to experiment to determine the relative value of any plans on which it was his business to decide. He delighted in employing the vast in nature to contribute to the accommodation of man; yet he did not despise minutiae—a point too seldom attended to by projectors.

For some years before his death, he gradually retired from professional employment, and he latterly amused his leisure hours by writing a detailed account of the principal undertakings which he had planned and lived to see executed. The immediate cause of Mr Telford's death was a repetition of severe bilious attacks, to which he had for some years been subject, and which at length proved fatal. His life, prolonged by temperance and cheerfulness, at length drew to a close, and he expired at his house in Abingdon Street, Westminster, September 2, 1834. He died a bachelor. His remains received honourable interment in Westminster Abbey.

SIR WILLIAM HERSCHEL.

THE science of astronomy, which, from the time of Copernicus, had been gradually improving through the laborious exertions of Tycho Brahé, Kepler, Huyghens, Newton, Halley, Delisle, Lalande, and other eminent observers of the starry firmament, was considerably advanced by the discoveries of Herschel, whose biography now comes under our notice.

William Herschel was born at Hanover on the 15th of November 1738. He was the second of four sons, all of whom were brought up to their father's profession, which was that of a musician. Having at an early age shewn a peculiar taste for intellectual pursuits, his father provided him with a tutor, who instructed him in the rudiments of logic, ethics, and metaphysics, in which abstract studies he made considerable progress. Owing, however,

to the circumscribed means of his parents, and certain untoward circumstances, these intellectual pursuits were soon interrupted, and at the age of fourteen he was placed in the band of the Hanoverian regiment of guards, a detachment of which he accompanied to England, about the year 1757 or 1759. His father came with him to England, but after the lapse of a few months he returned home, leaving his son, in conformity with his own wish, to try his fortune in Great Britain—the adopted home of many an ingenious foreigner. How or when he left the regimental band in which he had been engaged, we are not informed. After struggling with innumerable difficulties, and no doubt embarrassed by his comparative ignorance of the English tongue, he had the good fortune to attract the notice of the Earl of Darlington, who engaged him to superintend and instruct a military band at the time forming for the Durham militia. After fulfilling this engagement, he passed several years in Yorkshire, in the capacity of teacher of music. He gave lessons to pupils in the principal towns, and officiated as leader in oratorios or concerts of sacred music—a kind of employment in which the Germans are eminently skilled, from their love of musical performances. Herschel, however, while thus engaged in earning an honourable livelihood, did not allow his professional pursuits to engross all his thoughts. He sedulously devoted his leisure hours in improving his knowledge of the English and Italian languages, and in instructing himself in Latin, as well as a little Greek. At this period, he probably looked to these attainments principally with a view to the advantage he might derive from them in the prosecution of his professional studies; and it was no doubt with this view also that he afterwards applied himself to the

perusal of Dr Robert Smith's *Treatise on Harmonics*—one of the most profound works on the science of music which then existed in the English language. But the acquaintance he formed with this work was destined ere long to change altogether the character of his pursuits. He soon found that it was necessary to make himself a mathematician, before he could make much progress in following Dr Smith's demonstrations. He now, therefore, turned with his characteristic alacrity and resolution to the new study to which his attention was thus directed; and it was not long before he became so attached to it, that almost all the other pursuits of his leisure hours were laid aside for its sake.

Through the interest and good offices of a Mr Bates, to whom the merits of Herschel had become known, he was, about the close of 1765, appointed to the situation of church organist at Halifax. Next year, having gone, with his elder brother, to fulfil a short engagement at Bath, he gave so much satisfaction by his performances, that he was appointed organist in the Octagon Chapel of that city, upon which he went to reside there. The place which he now held was one of some value; and from the opportunities which he enjoyed, besides, of adding to its emoluments by engagements at the rooms, the theatre, and private concerts, as well as by taking pupils, he had the certain prospect of deriving a good income from his profession, if he had made that his only or his chief object. This accession of employment did not by any means abate his propensity to study for mental improvement. Frequently, after the fatigue of twelve or fourteen hours occupied in musical performances, he sought relaxation, as he considered it, in extending his knowledge of pure and mixed mathematics.

In this manner he attained a competent knowledge of geometry, and found himself in a condition to proceed to the study of the different branches of physical science which depend upon mathematics. Among the first of these latter that attracted his attention were the kindred departments of astronomy and optics. Some discoveries about this time made in astronomy awakened his curiosity, and to this science he now directed his investigations, at his intervals of leisure. Being anxious to observe some of those wonders in the planetary system of which he had read, he borrowed from a neighbour a two-feet Gregorian telescope, which delighted him so much that he forthwith commissioned one of larger dimensions from London. The price of such an instrument, he was vexed to find, exceeded both his calculations and his means ; but though chagrined, he was not discouraged—he immediately resolved to attempt with his own hand the construction of a telescope, equally powerful with that which he was unable to purchase ; and in this, after repeated disappointments, which served only to stimulate his exertions, he finally succeeded.

Herschel was now on the path in which his genius was calculated to shine. In the year 1774, he had the inexpressible pleasure of beholding the planet Saturn through a five-feet Newtonian reflector made by his own hands. This was the beginning of a long and brilliant course of triumphs in the same walk of art, and also in that of astronomical discovery. Herschel now became so much more ardently attached to his philosophical pursuits, that, regardless of the sacrifice of emolument he was making, he began gradually to limit his professional engagements and the number of his pupils. Meanwhile, he continued to employ his leisure in the fabrication of

still more powerful instruments than the one he had first constructed ; and in no long time he produced telescopes of seven, ten, and even twenty feet focal distance. In fashioning the mirrors for these instruments, his perseverance was indefatigable. For his seven-feet reflector, it is asserted that he actually finished and made trial of no fewer than two hundred mirrors before he found one that satisfied him. When he sat down to prepare a mirror, his practice was to work at it for twelve or fourteen hours, without quitting his occupation for a moment. He would not even take his hand from what he was about, to help himself to food ; and the little that he ate on such occasions was put into his mouth by his sister. He gave the mirror its proper shape, more by a certain natural tact than by rule ; and when his hand was once in, as the phrase is, he was afraid that the perfection of the finish might be impaired by the least intermission of his labours.

It was on the 13th of March 1781 that Herschel made the discovery to which he owes, perhaps, most of his popular reputation. He had been engaged for nearly a year and a half in making a regular survey of the heavens, when, on the evening of the day that has been mentioned, having turned his telescope—an excellent seven-feet reflector of his own constructing—to a particular part of the sky, he observed among the other stars one which seemed to shine with a more steady radiance than those around it ; and, on account of that, and some other peculiarities in its appearance, which excited his suspicions, he determined to observe it more narrowly. On reverting to it after some hours, he was a good deal surprised to find that it had perceptibly changed its place—a fact which, the next day, became

still more indisputable. At first he was somewhat in doubt whether or not it was the same star which he had seen on these different occasions ; but after continuing his observations for a few days longer, all uncertainty upon that head vanished. He now communicated what he had observed to the astronomer-royal, Dr Maskelyne, who concluded that the luminary could be nothing else than a new comet. Continued observation of it, however, for a few months dissipated this error ; and it became evident that it was, in reality, a hitherto undiscovered planet. This new world, so unexpectedly found to form a part of the system to which our own belongs, received from Herschel the name of *Georgium Sidus*, or *Georgian Star*, in honour of the king of England ; but it has been more generally known as *Uranus*. He afterwards discovered, successively, no fewer than six satellites or moons belonging to his new planet.

The announcement of the discovery of this new planet at once made Herschel's name universally known. In the course of a few months the king bestowed upon him a pension, that he might be enabled entirely to relinquish his musical engagements at Bath ; and upon this he came to reside at Slough, near Windsor. He now devoted himself entirely to science ; and the constructing of telescopes and observations of the heavens continued to form the occupations of the remainder of his life. Astronomy is indebted to him for many other most interesting discoveries besides the celebrated one of which we have just given an account, as well as for a variety of speculations of the most ingenious, original, and profound character. But of these we cannot here attempt any detail. He also introduced some important improvements into the

construction of the reflecting telescope, besides continuing to fabricate that instrument of dimensions greatly exceeding any that had been formerly attempted, with powers surpassing, in nearly a corresponding degree, what had ever been before obtained. The largest telescope which he ever made was his famous one of forty feet long, which he erected at Slough, for the king. It was begun about the end of the year 1785, and on the 28th of August 1789 the enormous tube was poised on the complicated but ingeniously contrived mechanism by which its movements were to be regulated, and ready for use. On the same day a new satellite of Saturn was detected by it, being the sixth which had been observed attendant upon that planet. A seventh was afterwards discovered by means of the same instrument. This telescope has since been taken down, and replaced by another of only half the length, constructed by the distinguished son of the subject of our present sketch.

So extraordinary was the ardour of this great astronomer in the study of his favourite science, that for many years, it has been asserted, he never was in bed at any hour during which the stars were visible; and he made almost all his observations, whatever was the season of the year, not under cover, but in his garden, and in the open air—and generally without an attendant. By these investigations, Herschel became acquainted with the character of the more distant stars, upon which he wrote a variety of papers. In 1802, he presented to the Royal Society a catalogue of five thousand new nebulæ, nebulous stars, planetary nebulæ, and clusters of stars; thus opening up a boundless field of research, and making the world aware of the sublime truth of there being an infinitude of heavenly bodies far

beyond the reach of ordinary vision, and performing in their appointed places the offices of suns to unseen systems of planets.

These discoveries established Herschel's claims to rank amongst the most eminent astronomers of the age, and amply merited the distinctions conferred upon him by learned bodies and the reigning prince. In 1816, George IV. then Prince Regent, invested him with the Hanoverian and Guelfic order of knighthood. He was now, from being originally a poor lad in a regimental band, rewarded for his long course of honourable exertion in the cause of a science upon which so much of our national welfare depends. Herschel (now Sir William) did not relinquish his astronomical observations until within a few years of his death, which took place on the 23d of August 1822, when he had attained the age of eighty-three. He died full of years and honours, bequeathing a large fortune, and leaving a family which has inherited his genius.

SIR HUMPHRY DAVY.

HUMPHRY DAVY, one of the most laborious and successful explorers of the science of chemistry in modern times, was born at Penzance, in Cornwall, on the 17th of December 1778. His parents belonged to the humbler order of society, but were nevertheless respectable. After receiving the elements of education at Penzance, and being for some time at the grammar-school of Truro, he was bound apprentice, in 1795, to a surgeon-apothecary in his native town. When thus

entering upon a profession, the condition of his family was sufficiently humble, and he no doubt foresaw that his success in life would depend on his own exertions. We are informed that at this time, his father having died, his mother found herself under the necessity of becoming a milliner in Penzance, by which she contrived to glean an honourable subsistence for her family.

Little is known of Davy's early character, beyond the circumstance of his facility in gathering and treasuring up the information which his books afforded him, and his predilection for poetry. While acting in the capacity of apothecary's apprentice, he devoted his leisure hours to examinations into the productions of nature as well as into chemical science. His instruments were supplied by his own ingenuity. In the contrivance of apparatus and invention of expedients, he evinced great proficiency; and in after-years, it is allowed by scientific men, that in this respect, as well as in others, he stood unrivalled. Whilst aspiring after distinction in the paths of philosophical discovery, he was indebted for emergence from the obscurity of his native place to the accidental notice of Mr Davies Giddy Gilbert. This worthy individual took an interest in the chemical pursuits of his young acquaintance, and remained ever afterwards his steady friend. Principally through the interest of this gentleman, young Davy was engaged by Dr Beddoes to superintend a pneumatic medical institution, which that able but eccentric man had established at Bristol for the treatment of diseases.

In October 1798, Davy quitted Penzance for Bristol, having then scarcely attained his twentieth year, his master having kindly given up his indenture, so as not to stand in the way of his advancement. Removed

from a small country town to a populous city offering scope for the exercise of his genius, Davy now felt as if in a new world. He associated with men engaged in those philosophical pursuits in which he found so much delight, was provided with suitable apparatus, and speedily entered upon that brilliant career of discovery which has rendered his name so illustrious. It was not his intention to abandon the study or practice of medicine; but after a short time he found it necessary to do so, and direct his whole attention to chemistry. It was at this period of his life that Davy pursued a series of hazardous experiments upon nitrous oxide—a gas which, if incautiously used, is destructive of animal life, and when taken into the lungs, produces highly increased muscular action, and a propensity to indulge in laughter. Davy not only inhaled this dangerous fluid, but also carburetted hydrogen and carbonic acid gas, with a view to develop facts illustrative of their nature. The fame which followed the publication of these investigations spread the name of the young chemist. At this period the establishment of the Royal Institution in London took place, and Davy was invited to become assistant-professor of chemistry, and director of the laboratory. He accepted the offer, and, in the beginning of the year 1801, entered upon the duties of his situation.

Only a few weeks had elapsed in this new sphere of exertion when he was appointed by the managers lecturer in chemistry, instead of assistant. His first lecture was delivered in 1801, and from this period we may date the commencement of his splendid career. He at once succeeded in making a strong impression upon the public mind, and by a series of brilliant discoveries he was enabled to maintain it till the hour of his death. His

discourses were admirably adapted to fascinate his audience, which was composed, not of philosophers alone, but the gay and fashionable of the city, a considerable proportion of whom were ladies in the higher walks of life. His experiments, particularly with the voltaic battery, an instrument with which he was destined to work such miracles, riveted universal attention; philosophers admired and applauded, and the softer sex were involved in the most agreeable terrors. His style was highly florid. It largely partook of that poetical inspiration which, as has been already stated, he so early evinced the possession of. Coleridge the poet was a constant attendant on the lectures, and has himself declared it was to increase the stock of his metaphors. So great was Davy's popularity, that duchesses vied with each other in doing homage to his genius; compliments, invitations, and presents were showered upon him from all quarters, and no entertainment was considered complete without the presence of the chemical lecturer. All this adulation had its usual effect upon the mind of Davy: his devoted love of science remained unabated till the day of his death; but that simplicity of manners which he brought with him from the country, and which so endeared him to his friends, was unfortunately in a great measure obliterated.

In 1803, he commenced a series of lectures on agriculture, which were continued for several years. These were afterwards published in a collected form, and they are considered as forming the most philosophical and valuable work upon the subject which has ever appeared. In the same year he was elected a fellow of the Royal Society. From this period until 1807, he continued to increase in popularity, making at intervals discoveries

which would entitle humbler investigators to an honourable place in the annals of science. His leisure months were spent in the country, sometimes encircled by his relations in the bosom of his native hills, at other times at the seats of noblemen and others; for all ranks delighted to honour him. But wherever he went, angling was his amusement. To this humble recreation he was as passionately attached as Izaak Walton himself, and in after-years he made it the subject of a small treatise, which, however, was more of a reflective than a practical character.

We have now arrived at that period of his career when he effected those discoveries which have more particularly distinguished his name. We allude to his development of the laws of voltaic electricity. This had hitherto been a subject involved in great confusion. The most contradictory theories had been repeatedly proposed, and as often abandoned, both in England and on the continent. In a limited biography like the present, it is impossible to give a detail of the exact situation in which affairs stood at this eventful period. It is sufficient to say that Davy brought this department of science to a state of extraordinary perfection; indeed, he may be said to have created it the same way as Newton is allowed to have explained the true theory of the universe. The announcement of these discoveries connecting chemistry with galvanism, and establishing that chemical combinations and decompositions were referable to the law of electric attractions and repulsions, was received with applause by all the scientific men in Europe. Some idea of this may be formed from the circumstance, that it was crowned by the Institute of France with the prize of the medal of three thousand francs, and that at a time

when the nations mutually entertained the bitterest hostility towards each other, and were at open war. The prize here awarded was one founded by Napoleon when First Consul, for important discoveries in electricity and galvanism.

Having discovered the general principle of voltaic electricity, he proceeded in his investigation of phenomena; and the result was the brilliant and startling discovery that the fixed alkalies have metallic bases. It is well known that, amongst other substances, potash and soda are in chemical language called alkalies. The former of these substances was submitted to the agency of a galvanic battery, and, by a variety of ingenious expedients, Davy succeeded in decomposing it, and obtaining as one of its constituents small globules of metal resembling quicksilver. Some of these no sooner appeared than they burned with an explosion of bright flame. The difficulty of collecting this new and singular metal was great, from the strong attraction it has for oxygen, one of the gases of which air and water are composed; but, after various trials, he ultimately accomplished his object. Its external character is that of a white metal, instantly tarnishing by exposure to air. It received from its discoverer the appropriate name of *potassium*. When thrown upon water, it decomposes that fluid, combining with its oxygen, and an explosion is produced, accompanied with a vehement flame. If ice be substituted for water, potassium burns with a bright rose-coloured flame, and a deep hole is made in the ice, which is found to contain a solution of potash. The latter substance, then, is a metallic oxide. Soda and other alkalies underwent the same rigorous investigation, and with a similar result.

Various other investigations engaged his attention, the principal of which was regarding the nature of chlorine, and this he determined was a simple gas, by a variety of admirable experiments. In the years 1810 and 1811, he was invited to Dublin, to deliver lectures on chemistry and other scientific subjects. In 1812, he published his *Elements of Chemical Philosophy*, the most valuable record of discovery which has ever appeared since the *Principia* of Newton. The same year he married Mrs Apreece, who brought him a large fortune. A day or two previous to this event he was knighted, being the first who received the honour from the Prince Regent.

Davy's acquisition of fortune by marriage, along with the honour of knighthood, would seem to have had no good effect upon his mind. His original simplicity of character was already lost in the intoxication produced by the applauses which had been showered upon him; and he now exhibited to the world a spectacle of arrogance which it is painful to contemplate in such a character. In the year 1813, he obtained permission of Bonaparte to travel in France, and he forthwith proceeded to Paris. 'The most remarkable circumstance,' says his biographer, in the *Encyclopædia Britannica*, 'arising out of Davy's visit to Paris, was the proof it afforded of his utter want of any relish for the sublimest productions of the pencil and the chisel, with which the French capital then abounded. He was well received by the French philosophers; he was honoured by their flattering attentions; but we are constrained to say that he returned their courtesies with an arrogance and ridiculous affectation of superiority, which justly offended, and tended much more to lower English philosophy than to elevate Davy in their estimation. Another act of

ill-judged interference completed the disgust which his absurd conduct had excited. Before the time of Davy's visit to France, Courtois had discovered *iodine*, and Gay-Lussac and Thenard were engaged upon its properties. Some of that substance was given to Davy by Ampère, and he immediately began to examine it. On the 11th of December he offered to the Institute a general view of its nature and relations, and transmitted to London an account of its properties, which was read to the Royal Society on the 20th of January 1814. This paper is introduced with the remark that "Gay-Lussac is still engaged in experiments on this subject; and from his activity and great sagacity, a complete chemical history of it may be anticipated." This priority of occupation ought to have prevented Davy from the ungenerous anticipation.' We introduce this circumstance to shew how the greatest of men are not exempt from failings, and how, when intoxicated with approbation, they are apt to throw aside those moral qualities which alone can make them respected.

Before Davy's return to England, he visited Florence, Rome, and Naples, and made some observations on the phenomena of Vesuvius. A few months after his return to his native country, his attention was called to the subject of those terrible explosions of inflammable air, or fire-damp, in coal-mines, which were then of frequent occurrence. He accordingly, with great alacrity, commenced an investigation into the nature of this gas, and in an incredibly short space of time he had invented no less than four different kinds of lamps, all of which might be used with impunity in the foulest atmosphere. To explain the subject simply, it may be stated, that in the course of his researches upon the subject, he made the

following discovery—that if a lamp or candle be surrounded with wire-gauze, or metallic plates, perforated with numerous small holes, though the gas or fire-damp may explode within, it will not inflame the surrounding atmosphere without. Upon this principle, accordingly, the safety-lamp was formed ; and, except in particular cases, it completely answers the purposes for which it was invented. Sir Humphry also discovered, that if a coil of platinum wire be suspended over the wick of the lamp, although the latter should be extinguished, the former will glow with a light sufficiently strong to guide the miner through the darkness of his perilous subterranean, and that, when he reaches a purer atmosphere, the heat will be sometimes sufficient to rekindle his lamp !

In the year 1818, Sir Humphry took his departure for Naples, in order to examine the papyri of Herculaneum, and, if possible, discover some method of separating the leaves from each other. His efforts, however, failed, not from want of zeal or ingenuity on his part, but from the state in which the manuscripts were found. He returned to England, and was elected President of the Royal Society. On the 30th November 1820, he took his seat in the chair of Newton.

It will be impossible to enumerate all the objects of inquiry which attracted the attention of this indefatigable philosopher during the remainder of his life. The most important was that regarding the corrosive action of sea-water upon copper. He commenced his investigations in 1823, and prosecuted them for a considerable period. The truth of his beautiful theory was established ; but, strange to say, the remedy failed. There can be little doubt, however, that, had his health continued, he would ultimately have succeeded. But disease

began to set its seal upon his frame, and distract his attention from grave studies. In 1828, he took his departure for the continent, in hopes that a milder climate would have some favourable effect upon him; but health was petitioned in vain—he was destined never to return. The lamp of genius, however, burned bright to the last, as was testified by his *Consolations in Travel, or Last Days of a Philosopher*, a work evincing considerable depth of reflection, but marred by a wild extravagance of fancy. He continued for some time at Rome, and afterwards proceeded to Geneva, where he expired, of an attack of apoplexy, on the 30th of May 1829.

In concluding our memoir of Sir Humphry Davy, we cannot do better than quote the words of his biographer in the *Encyclopædia*, already adverted to. ‘We have sufficiently characterised the various productions of this eminent man in our review of his life. We have alluded to those little infirmities which mix themselves with the aspirations of genius, with no unfriendly intention. They are specks in its bright mirror, which they do not obscure; but as everything connected with such a man belongs to history, they should not be passed over in silence; for while the example of his great qualities is held up to animate the exertions of unfriended talent struggling with obscurity, the consequences of his infirmities may become more valuable lessons to check the presumption of successful genius.’

MICHAEL FARADAY.

AMONG the men who have lately gained distinction in the intelligent pursuit of practical science, none is more noteworthy than MICHAEL FARADAY, whose life offers a fine example to the young of what may be accomplished by earnest perseverance and self-denial under the most trying difficulties.

The Faradays were an old family in humble circumstances in Yorkshire, whence one of them, James Faraday, soon after his marriage, removed to London, to carry on the business of a blacksmith. He had several children, of whom Michael, the third, was born at Newington, in Surrey, September 22, 1791. A few years afterwards, about 1796, James Faraday removed to a small dwelling over a coach-house in Jacob's Well Mews, Charles Street, Manchester Square, his work as a journeyman blacksmith being at a forge in Welbeck Street. Here was a beginning of life for Michael of no great promise. With other children he amused himself in the mews or stable lane where his parents resided, and leading a little sister by the hand might have been seen strolling into Manchester Square. As he grew up, he was sent to a day-school in the neighbourhood, where he learned reading, writing, and arithmetic, and that was his entire school education. Everything else he was left to learn by himself.

It was so far favourable to Michael's chances of success that his father was a man of strenuous religious principle, connected with a body of Sandemanians, of

Scotch Presbyterian origin, and had a good example set to him as regards matters of serious concern. Through this early influence, Michael became a member of this far from numerous religious body, and remained attached to it through life. Brought up with the full knowledge that he required to earn his bread by some course of industry, he was prepared for what might cast up, and considered himself fortunate in being engaged on trial for a year as an errand-boy by Mr George Riebau, stationer and news-agent, 2 Blandford Street. This was in 1804, when he was thirteen years of age. His duties were toilsome, for he had to make long rounds in delivering newspapers which his employer lent out to be read, and as in this species of labour Sunday mornings were not excepted, he felt it to be peculiarly irksome, for sometimes he scarcely completed his wearisome rounds before it was time to go to church. Any youth reared in easy circumstances can realise the unpleasantness of this condition of things.

Pleasant or unpleasant, young Faraday had to make the best of his lot. The preliminary year being tided over, he was, in 1805, bound as an apprentice for seven years, and, in consideration of his faithful service, no premium was exacted. It was a wretched arrangement for the poor lad, but he submitted with a degree of thankfulness, and set to work with an earnest resolution to do his duty. He was taught the business of a book-binder, at which he worked diligently, and, as he had a good master and mistress, there was little reason to complain. Consolation for shortcomings lay in the pleasures of reading and study. This is a noteworthy circumstance. Short hours of daily labour and outdoor recreation have become a popular clamour, as if lounging idly

about the streets was to be of service to the public and to individuals. It has not been by either idleness or mere amusement, but by diligent application, that England has been made what it is, or that such men as Franklin, Stephenson, and a hundred others rose to distinction. How Michael Faraday recreated himself, may be told in his own words.

‘Whilst an apprentice, I loved to read the scientific books which were under my hands, and, amongst them, delighted in Marcet’s *Conversations in Chemistry*, and the electrical treatises in the *Encyclopædia Britannica*. I made such simple experiments in chemistry as could be defrayed in their expense by a few pence per week, and also constructed an electrical machine, first with a glass phial, and afterwards with a real cylinder, as well as other electrical apparatus of a corresponding kind.’ To pursuits of this nature he was led by a perusal of Watts *On the Mind*; for the book taught him to think, and developed those scientific tendencies which belonged to his mental constitution. In this record of his early experiences, we see that the youthful perusal of works of solid worth may, from one thing to another, lead to no small degree of social eminence.

Another means of mental culture cast up. In going errands into the city, young Faraday saw bills on the walls and in shop-windows announcing that lectures on natural philosophy were to be delivered at eight o’clock in the evening by Mr Tatum, at his house, 53 Dorset Street, Fleet Street. He felt desirous to attend, but two difficulties were in the way. He was occupied till past eight o’clock, and the price of admittance to each lecture was a shilling. The difficulties were happily got over. His employer allowed him to go away in time for

the lectures, and his elder brother, Robert, a working blacksmith, made him a present of the requisite sum. So favoured, he attended twelve or thirteen lectures in the course of 1810 and 1811. The lectures considerably added to his stock of ideas on scientific subjects, while his attendance on them was beneficial in bringing him into acquaintanceship with several young men possessing tastes kindred to his own, and from whom, as also from Mr Tatum, he borrowed books required for particular branches of study.

At this time, Faraday kept a note-book in which he daily entered observations on things worth remembering, and also recorded the steps by which he advanced in knowledge. Among these memoranda is given the following account of his first attendance at the Royal Institution, at which he was destined to attain celebrity. 'During my apprenticeship, I had the good fortune, through the kindness of Mr Dance, who was a customer of my master's shop, and also a member of the Royal Institution, to hear four of the last lectures of Sir H. Davy in that locality, 1812. Of these I made notes, and then wrote out the lectures in a fuller form, interspersing them with such drawings as I could make. The desire to be engaged in scientific occupation, even though of the lowest kind, induced me, whilst an apprentice, to write, in my ignorance of the world and simplicity of mind, to Sir Joseph Banks, the President of the Royal Society. Naturally enough, "No answer" was the reply left with the porter.'

Faraday's apprenticeship expired in October 1812, and for a short time afterwards he wrought as a journeyman bookbinder with a Mr De la Roche. This new employer being of a passionate temper, the employment

was distasteful, and would gladly have been abandoned, if anything better could be secured. Continuing his scientific studies and experiments at all spare intervals, he resolved, if possible, to attach himself wholly to the pursuits for which, as he thought, he had a vocation. In a letter to a friend, he mentions how he was emboldened to write to Sir H. Davy, inclosing a neatly written abstract of the lectures he had heard delivered at the Royal Institution, and asking for any situation that might be vacant. Davy was pleased with the ability as well as the frankness of the applicant, procured him the situation of assistant in the laboratory of the Institution, at a salary of twenty-five shillings a week, with two rooms for his dwelling at the top of the house. Faraday entered on this employment in March 1813. From that time, as is well known, he rose step by step to be President of the Royal Institution, and likewise one of the most eminent physicists of the day—in his whole career, offering a splendid example of what may be effected by self-culture along with high moral qualities. This distinguished man, whose memoirs may very profitably be perused by the young, died 25th August 1867.

HORACE GREELEY.

IN the career of Horace Greeley, the American journalist, there was much of an exemplary kind, worth the consideration of youths who are required to make their way in the world by a course of persevering industry and self-denial.

Zacceus Greeley, the father, was a hard-working farmer, in poor circumstances, in the town of Amherst, New

Hampshire. He was descended from an English emigrant, and had married Mary Woodburn, whose ancestors were from the north of Ireland. Horace, child of this humble pair, was born February 3, 1811. He came third in a family of seven, but by the death of the two elder, he became the eldest surviving son of the farmer. As is often the case with lads of an aspiring turn, young Horace was greatly indebted to the clear understanding and good counsels of his mother. She was well versed in Irish and Scottish history, ballads, and legends, all of which powerfully aided in the mental development and tastes of her son. Growing up a peaceful and meditative child, Horace made good progress at school, in early life shewing an interest in learning, and a love of such books and newspapers as happened to fall in his way. Tall, and possessing muscular vigour, he was soon put to work in the fields, but every interval of labour was employed in reading; and what he read he profited by, for he had an excellent memory, and possessed the power of concentrating his mind on what was worthy of being remembered. Therein, of course, lay the foundation of his future eminence; though there was something else to which he was indebted—his power of enduring privation, along with a resolution to overcome the difficulties incidental to his untoward position.

Misfortune overtook the family, through the folly of the father, who, besides living too freely, became security for some money, which he had to pay, and in paying it was ruined. Horace was ten years old at the date of this catastrophe. After a vain struggle for existence in the neighbourhood, the family removed to Westhaven, Vermont, where some work was got by Mr Greeley, his occupation for a time being wood-chopping and land

clearing, in which all the family assisted. In winter, when out-door labour was at a stand, Horace was sent to school, but the teacher confessing he could add nothing to the book-learning of the boy, he came home, and made himself useful in instructing his youngest sister. The time arrived when some sort of independent course of life became imperative. A fondness for books naturally led to the wish to be a printer, and he importuned his father to be allowed to get at the types. As Horace was useful at home, old Greeley did not favour the notion of his son leaving him to follow a trade, but when an advertisement appeared for an apprentice in the office of a weekly paper published at East Poultney, eleven miles distant, objections were overcome; and the lad, at fourteen years of age, was suffered to go off in search of the much desired employment.

Tall, lank, and in coarse garments, the light-haired youth tramped to Poultney, presented himself to the master of the printing-office, and was accepted, subject to his father's approval. Greeley, the elder, was a little intractable; but at length, on some loose understanding, he consented that his son should learn the trade, whereupon Horace was literally left to his shifts, for the family almost immediately removed to Erie County, Pennsylvania.

Now begins the industrial career of Horace Greeley. Acute and self-reliant, he took to type-setting by a kind of intuition. The first day he was put to the case with a composing-stick in his hand, he hardly required any instruction. Plodding diligently over his work, and heeding no one, he got on famously, and in a single day was almost master of the craft of the compositor. The boys in the office attempted to ridicule his ungainly

appearance and his taciturnity ; but Horace, taking all their tricks in good part, was soon a general favourite, and set types with the alacrity of his seniors. As regards means of living, he was requited for his labour by getting his board and forty dollars a year—not a bad beginning for an artisan. And so, as a compositor, he now pursued his employment in a country printing-office for fully four years, when matters were abruptly brought to a stand, by a discontinuance of the weekly paper, and the breaking up of the establishment. This unforeseen catastrophe took place in the summer of 1830. Horace was now nineteen years of age ; he had become a proficient in his profession, and could work at either case or press, was well read, and, thanks to his memory and resolute will, had acquired considerable skill as a debater on literary and public topics. To Horace, the breaking up of the printing-office just at this juncture was a peculiar misfortune ; for he had lately by an accidental fall hurt his leg, and was not very able to encounter a long journey in quest of employment. Still there was no help for it, and he set out on his travels.

Considerations regarding the lame leg suggested the propriety of, in the first place, going home to recruit, but the paternal home was far distant in Pennsylvania, and the journey involved a tedious conveyance by canal-boats, ending with a walk of a hundred miles through the woods. Setting out with a small bundle and a stick, and some dollars in his pocket, his father's log-hut was reached in about twelve days. Kindly received by his mother, who assiduously nursed the sore leg till it got seemingly well, Horace for a few weeks enjoyed the change of scene, though fretting a little at his forced inactivity. Impatient of idleness, he walked to James-

town, a distance of twenty miles, to seek employment. This he obtained, but not to any advantage, for the printer could not pay him for his labour, the bad leg swelled prodigiously, and he was compelled to return home. Maternal care failing to effect a permanent cure, Horace at length found out a doctor famous for his skill in healing diseased limbs, and putting himself under his care, the unfortunate leg was happily cured, leaving only a little weakness, which was ultimately got rid of.

Again work had to be sought for. This time, he found it at Lodi, in the state of New York, but again there was a scarcity of money to pay wages, and so, after a trial of five or six weeks, Horace once more took to his stick and bundle, in quest of new adventures. On this occasion he was more fortunate in an employer. After a pretty long journey on foot, he arrived at the town of Erie, situated on the border of the lake of that name, and got work in the office of the *Erie Gazette*, published by a Mr Sterritt, who, though surprised at Greeley's uncouth appearance, gave him a fair chance of making himself useful, during a temporary vacancy in the office. Installed at the case, he was found not to be a rapid compositor, but so remarkably steady and persevering, that he accomplished more than many faster workmen. So well pleased was Mr Sterritt with the proficiency of the new hand, that he put him on the footing of a regular journeyman, at the usual wages of twelve dollars a month and board. At all spare intervals in his labour, Horace, as formerly, occupied himself in reading and storing his mind with knowledge. The moment his day's work was over, he hurried off his apron, washed his hands, and rushed to his book, at no time idling away precious hours in dawdling about the streets, or misspending

means in taverns. Thus, in earnest work and reading, he spent seven months, at the end of which the young man returned whose absence had led to the vacancy in the office, and Horace received his discharge. His whole personal expenses during the seven months had been only six dollars. Of the remainder of his wages, he appropriated fifteen dollars for travelling charges, and the rest was generously sent by him to his father, whose circumstances stood in need of pecuniary aid.

The world once more lay before him where to choose. His mind was made up to go to New York, where there were numerous printing-offices, and a good chance of falling into profitable employment. Again the bundle and stick were in requisition, and again, through the agency of canal-boats and some walking, he effected his journey, and arrived in New York on Friday morning, 18th August 1831. Like London, New York is partly a city of adventurers, many of the more wealthy and notable citizens having come to it nearly penniless, and made their way to riches and renown through the most indomitable perseverance. In the case of Greeley, all depended on himself. His means of subsistence amounted to ten dollars, or about two pounds sterling; he had no friends, no letters of introduction; besides his small stock of money, he possessed only the small bundle of clothes which he carried over his shoulder. Poor he undoubtedly was, but let us not forget that he was a skilled mechanic, with a will to work, and only needed an opportunity for shewing his capacity for labour. One thing was against him. This was his disregard of appearances. In the world at large, one, even for his own sake, is bound to conform to ordinary usages. Greeley, however, had always been neglectful on this point. He was

careless about his dress, was indifferent to wearing stockings, and as a shambling sloven of timorous aspect, he was wholly devoid of exterior attractions. In all this he, of course, failed to do justice to himself, and by his eccentricity was in a degree guilty of disrespect to the ordinary obligations of society.

Unacquainted with any one, and ignorant of the town, he roamed about at random seeking for lodgings, and at last found something suitable to his purse in a low grog-shop and cheap boarding-house, kept by an Irishman named M'Gorlick. Becoming conscious that he was scarcely presentable to men of business, he bought a few garments of the commonest kind, the cost of which absorbed half his capital. A little improved by this acquisition, and invigorated by breakfast, he set out in quest of employment. It was a disappointing inquiry. All that memorable Friday he toiled up stair after stair, asking if a hand was wanted, on all occasions getting a rebuff, and in the evening he returned to his boarding-house tired and discouraged, feeling as if there was no room for him in New York. Next morning, the search was resumed, and was equally fruitless. A dismal evening was passed, and then came Sunday, which Horace piously devoted to church-going and quiet meditation.

In the course of Sunday afternoon, a gleam of hope shone upon him and buoyed him up. An Irish shoemaker, a friend of the landlord, coming to pay his accustomed Sunday visit, picked up an acquaintance with Horace, and hearing that he was in search of work as a compositor, mentioned that he lived in a house frequented by journeymen printers, from whom he had heard that hands were wanted at West's in Chatham Street. Great news this, not to be neglected. Next

morning, as early as five o'clock, Greeley was off to West's in quest of work, but he was much too soon; the office was still locked, and he sat down on the steps outside to wait for the opening. By-and-by one of West's journeymen arrived, and being likewise too soon, he sat down on the steps beside Greeley, and the two fell into conversation. Horace told his story, which peculiarly interested his companion, who happened to be a Vermonter, and he determined to do his best to help him, which he did at the opening of the office and the arrival of the foreman.

Fortunately for the young aspirant, there was a want of a hand for work of more than usual difficulty, which consisted in setting up a Polyglot Testament. Looking at the raw and gawky appearance of Horace, the foreman did not imagine he was fit for this intricate piece of compositorship; however, out of compassion he consented to let him try. In a few minutes Horace was at work, and to it he went with the most resolute determination to succeed. All day he worked with a silent intensity which astonished those about him; and still more astonished was the foreman when Horace presented the 'proof' of his day's work, for it was greater in quantity and more correct than anything that had been hitherto done on the Polyglot. The new hand was an established man at once. Thenceforward, for several months, he worked regularly and hard on the Testament, earning about six dollars a week.

It is at this point we must call the attention to a matter of moment to workmen. Here was a youth struggling his way on by assiduous industry, and who, exclusive of general intelligence, was chiefly indebted to two things of paramount importance, now to be

specified. He had piece-work, and he was allowed to work as long as he liked. Had he been bound by any rules of trade to labour for a certain weekly wage, and been limited to give only a certain number of hours' work per day, he must inevitably have been held back in his career, and the name Horace Greeley would probably never have been heard in literary or political circles. It was lucky that no such narrowly conceived rules prevailed, and that Horace was suffered to exert himself in any way conformable to his inclinations and ability. If anything, he worked too hard ; still, it was his fancy to work, and what right had any one to interfere ? Often he was at his case before six in the morning, and had not left it at nine in the evening ; always, he was the first to begin, and the last to leave. In the summer, no man besides himself worked before breakfast or after tea. While the other journeymen and the older apprentices were roaming about the streets, seeking amusement, he was eking out his day's wage by setting up an extra column of the Polyglot Testament. This, to be sure, was not a way to make himself popular, for the spectacle of diligence is a reproach to the idler. He had to endure sarcasms as well as some practical jokes, but he turned all aside with soft words and becoming pleasantry, and he was in time let alone as an oddity not to be provoked into reprisals. He also disarmed opposition by good-naturedly lending small sums to the more thriftless of his fellow-workmen, whose means were apt to run short before pay-day. He therefore, one way and another, wrought himself into general esteem. With improved fortunes, he removed to a boarding-house of a somewhat superior order, and felt as if his prospects were materially mending.

Work failing at West's, Greeley obtained a place in the office of the *Evening Post*; next, he procured employment for a few days on the *Commercial Advertiser*; then he did some work for a literary paper called the *Amulet*, after which he had a case in the office of the *Spirit of the Times*, to which paper he made some contributions. Altogether, he worked fourteen months as a compositor, and then, taking the opportunity of a slackness in the trade, he went to visit some relatives in New Hampshire. Autumn and apple-gathering being over, back he came to New York, found employment in the office of Mr J. S. Redfield, and there doggedly resumed his work of type-setting. Again, by being left unembarrassed about hours, his weekly bills were larger than those of any other compositor, often earning as much as double what was made by others at the same work by his side. Earning along with saving, means the accumulation of capital, and with the possession of capital, though it may not be very great, comes the desire and the possibility of social advancement. In short, Greeley, the employed, was in process of being developed into Greeley, the employer. From living by the work of his hands, he began to think of working by the head, and only waited for an opportunity of doing so. Accordingly, we arrive at a new phase in the history of this enterprising New Englander.

A turn in one's fortune usually comes in a curious and unforeseen way. Dr Sheppard, a man of slender resources, but with comprehensive ideas, fell upon the project of a cheap daily newspaper. With means wholly inadequate for the experiment, he induced Mr Story, foreman in the *Spirit of the Times* office, to enter on the undertaking; and to do so with some chance of success, Story invited the co-operation of Greeley, on account not only of his

mechanical, but literary ability. The cheap paper, called the *Morning Post*, which was in this way set on foot, was before its time, and unhappily proved a failure; but the firm of Greeley and Story succeeded in rearing a good general printing business. The association of the two young printers was not of long continuance. Poor Story was accidentally drowned, greatly to the grief of his partner, who secured a Mr Winchester in his stead, and the business went on prosperously under the new firm of Greeley & Co. Prosperous as it was, there were rocks ahead. In 1834, the firm started a weekly newspaper styled the *New Yorker*, on the editing of which Greeley entered with great relish. The paper was but moderately successful, and was in fact conducted at a loss, but was serviceable in making the editor favourably known as a skilful writer. The *New Yorker* kept up a struggling existence for some years; its decease being accelerated by the too common failing among Americans of what is mildly termed 'neglecting to pay for their paper.' Here we may close our narrative. After being employed in editing several papers, Horace Greeley at last started the *New York Tribune*, in 1841, the success of which was materially promoted by the good business habits of Mr M'Elrath as a coadjutor in the undertaking. With this well-known daily newspaper, noted for the purity with which it has been conducted, Greeley was conspicuously connected till his lamented death, 29th November 1872.

The subject of this little memoir has been compared to Franklin. There was a resemblance in their early career, but beyond this the comparison scarcely holds good. Benjamin Franklin was a man of capacious mind, broad views, discreet in his theories, and deservedly attained distinction as a statesman and philosopher.

Horace Greeley had a much less comprehensive and less genial understanding. He adopted rash and extravagant notions, such as those of Fourier and the French Socialists, nourished bitter prejudices against England, and strange to say of one in the category of a philanthropist, he was opposed to free trade, and a stern advocate of 'protection.' It is to be regretted that Greeley should have taken up these erroneous opinions, but so it was, and he can only be given credit for good intention. Acquiring popularity among the Republican party through the influence of his journal, they nominated him for President, a position for which, all things considered, he was assuredly not qualified, and the failure of the attempt may be accepted as a national blessing. Yet, let us fully acknowledge Greeley's single-heartedness and other commendable traits of character, his marvellous professional diligence, and the merit due to him for manfully overcoming early difficulties. It is to these latter particulars that his biography, along with that of Franklin, is eminently worthy of a place in the library of the young.

MISCELLANEOUS BIOGRAPHIC NOTICES.

HERE terminates a series of memoirs of individuals, whose lives afford striking examples of what may be accomplished by means of steady perseverance, skill, and integrity. In the enterprise and sufferings, but subsequent fame, of Copernicus, Galileo, Gutenberg, and Columbus—the industry and perseverance, under difficulties, of Franklin, Ferguson, Lackington, Gifford, Dodsley, and others—the philanthropy of Howard—the ardent pursuit of knowledge displayed by Sir William

Jones and Murray—the patriotism of Washington—and the splendid discoveries of Watt, Arkwright, and Stephenson—we find ample matter for admiration, and examples worthy of being followed. Numerous as are the instances which have been presented of men having risen, through the force of talent and application, and by the blessing of God upon their exertions, from humble to eminent situations in life, there remain, within the scope of general biography, innumerable cases equally remarkable and instructive.

Publius Syrus, Terence, and Epictetus, all distinguished men in ancient times, were slaves at their outset in life.—Cæcilius Statius, a celebrated dramatic writer in ancient Rome, was also originally a slave, but was emancipated in consequence of his talents.—Protagoras, a Greek philosopher, was at first a common porter.—Cleanthes, another philosopher, was a pugilist, and also supported himself at first by drawing water and carrying burdens.—Demosthenes, one of the greatest orators of antiquity, was the son of a sword-blade manufacturer at Athens, and was left an orphan at seven years of age; and it was with incredible perseverance and labour that he brought himself into notice.—Professor Heyne of Göttingen, one of the greatest classical scholars of his own or any other age, was the son of a poor weaver, and for many years had to struggle with the most depressing poverty. The efforts of this excellent man of genius appear to have been greater and more protracted than those of any other on record, but he was finally rewarded with the highest honours.—Bandoccin, one of the learned men of the sixteenth century, was the son of a shoemaker, and worked for many years at the same business.—Gelli, a celebrated Italian writer, began

life as a tailor ; and although he rose to eminence in literature, he never forgot his original profession, which he took pleasure in mentioning in his lectures.—The elder Opie, whose talent for painting was well appreciated, was originally a working-carpenter in Cornwall, and was discovered by Dr Wolcott (otherwise Peter Pindar) working as a sawyer at the bottom of a sawpit.—Abbot, Archbishop of Canterbury, who flourished in the sixteenth century, and distinguished himself by opposing the schemes of Charles I. was the son of a cloth-worker at Guildford.—Akenside, the author of *Pleasures of the Imagination*, was the son of a butcher in Newcastle-upon-Tyne.—D'Alembert, the French mathematician, was left at the steps of a church by his parents, and brought up by a poor woman as a foundling, yet arrived at great celebrity, and never forgot or abandoned his nurse.—Amyot, a French author of some celebrity for his version of Plutarch, lived in the sixteenth century, and was at first so poor as to be unable to afford oil or candles to assist his studies, which he had to carry on by fire-light ; and all the sustenance his parents could afford him was a loaf of bread weekly.—George Anderson, the translator of a treatise of Archimedes, and author of a General View of the East India Company's affairs, who died in 1796, was originally a day-labourer.

Dr Adam, who, in 1809, died rector of the High School of Edinburgh, rose from a very humble condition in life. When he came to Edinburgh to pursue his youthful studies, he was in a state of extreme poverty. He lodged in a small room at Restalrig, in the north-eastern suburbs ; and for this accommodation he paid fourpence a week. All his meals, except dinner, uniformly consisted of oat-meal made into porridge, together with small-beer, of

which he only allowed himself half a bottle at a time. When he wished to dine, he purchased a penny loaf at the nearest baker's shop ; and if the day was fair, he would despatch his meal in a walk to the Meadows or Hope Park, which is adjoining to the southern part of the city ; but if the weather was foul, he had recourse to some long and lonely stair, which he would climb, eating his dinner at every step. By this means all expense for cookery was avoided, and he wasted neither coal nor candles ; for when he was chill, he used to run till his blood began to glow ; and his evening studies were always prosecuted under the roof of some one or other of his companions. In 1761, when he was exactly twenty, he stood a trial for the situation of head-teacher in George Watson's Hospital at Edinburgh, and was successful. He subsequently composed and published a number of useful works belonging to classical study, and attained the eminent situation above mentioned.

Pope Adrian VI. one of the most eminent scholars of his time, began life in a state of extreme destitution. He could not afford candles wherewith to pursue his studies, and often read by the light of street-lamps, or in the church porches, where lights are often kept burning ; his eminent acquirements and unimpeachable character led him successively through different preferments in the church, till he was elected pope.—Claude Lorraine, Salvator Rosa, and other eminent painters, commenced their career in poverty and neglect, and owed all solely to their exertions and genius.—Astle, the archæologist, and author of a work on the Origin and Progress of Writing, was the son of the keeper of Needwood Forest.—Augereau, marshal of France, and Duke de Castiglione, under Bonaparte, was originally a private soldier in the

French and Neapolitan ranks.—John Bacon, an eminent sculptor of last century, was originally a painter of porcelain for potters.—Baillet, a laborious and learned French writer, was born of poor parents at Neuville, in Picardy, but he extricated and raised himself by his genius.—Ballard, the author of *Memoirs of British Ladies*, was originally a stay and habit maker; but being patronised for his acquirements, he was educated at Oxford, and made beadle of that university.—Barker, the inventor of pictorial representation by panorama, having failed in business, became a miniature-painter, and settled at Edinburgh; and it was while resident there, and taking a view from the Calton Hill, that the idea of forming a panorama entered his mind. His invention realised him a fortune.—Beattie, the author of the *Minstrel*, and Professor of Moral Philosophy in Aberdeen University, was originally a parish schoolmaster at Fordun.—Belzoni, one of the most eminent travellers in Egypt, at one period supported himself by exhibiting feats of strength in different towns in Great Britain.—The famous Admiral Benbow served at first as a common sailor in a merchant vessel.

Miss Benger, the authoress of the *Life of Mary Queen of Scots*, and many other productions of merit, was so very poor in early life, that, for the sake of reading, she used to peruse the pages of books in a bookseller's window in a little town in Wiltshire, where she resided, and returned day after day, in the hope of finding another page turned over. She afterwards obtained friends who assisted her.—Sebastian Castalio, the elegant Latin translator of the Bible, was born of poor peasants, who lived among the mountains of Dauphiné.—The Abbé Hautefeuille, who distinguished himself in the

seventeenth century by his inventions in clock and watch making, was the son of a baker.—The eminent Prideaux, who rose to be Bishop of Winchester, was born of such poor parents, that they could with difficulty keep him at school, and he acquired the rudiments of his education by acting as an assistant in the kitchen of Exeter College, Oxford.—The father of the famous Inigo Jones was a cloth-worker.—Sir Edmund Saunders, chief-justice of the King's Bench in the reign of Charles II. was originally an errand-boy to the young lawyers.—Lomonosoff, one of the most celebrated Russian poets of last century, began life as a poor fisher-boy.—The famous Ben Jonson worked for some years as a bricklayer; but while he had a trowel in his hand, he had a book in his pocket.—Peter Ramus, a celebrated writer of the sixteenth century, was at first a shepherd-boy, and obtained his education by serving as a lackey to the college of Navarre.—Longomontanus, the Danish astronomer, was the son of a labourer.—Parens, Professor of Theology at Heidelberg, and an eminent divine, was at first an apprentice to a shoemaker.—Hans Sachs, an eminent German poet and scholar, was the son of a tailor, and he himself wrought as a shoemaker for many years.—John Folcz, an old German poet, was a barber.—Lucas Cornelisz, a Dutch painter of the sixteenth century, had occasionally to support his family as a cook in gentlemen's kitchens.—The illustrious Kepler spent his life in poverty, but in apparent contentment.—Winckelman was so poor while a student, that he sang ballads through the streets at night for his support.—Wolfgang Musculus, another eminent German, began his career in a similar manner, having for some time sung ballads through the country, and begged from door to door, in order to obtain bread.

Dr Isaac Maddox, Bishop of Worcester, and known for his writings in defence of the church, was the son of a pastry-cook.—The late Dr Isaac Milner, Dean of Carlisle, and Lucasian Professor of Mathematics at Cambridge, was at first a weaver.—Dr White, Professor of Arabic at Oxford, was also a weaver in his youth.—Thedem, the chief surgeon of Frederick the Great, had in his youth been apprenticed to a tailor.—The celebrated John Hunter, the anatomist, was originally apprentice to a cabinetmaker.—William Kent and Francis Towne, landscape-painters of eminence, began as apprentices to coach-painters.—The famous Hogarth raised himself from the condition of a working-engraver on silver.—Edmund Stone, the eminent mathematician, was originally a boy who wrought in the garden of the Duke of Argyll at Inverary, and who taught himself to read.—Buchanan, the Scottish historian, was born of poor parents, and being sent by an uncle to Paris for his education, he was there so neglected, that, in order to get back to his own country, he enlisted as a private soldier in a corps leaving France for Scotland: Buchanan had to undergo many difficulties before his learning was appreciated.—Cervantes, the author of *Don Quixote*, commenced life as a soldier, lost his left hand in battle, and was a captive in Algiers for five years, during which period he wrote part of his celebrated work.—Giordani, an Italian engineer and mathematician of the seventeenth century, was originally a common soldier on board of one of the pope's galleys.—William Hutton, the eminent historian of Birmingham, and the author of some miscellaneous pieces, was the son of a poor woolcomber, and suffered the severest pangs of poverty in his early years.—Joly, the French

dramatist, was the son of the keeper of a coffeehouse.—Erasmus, a celebrated Dutch scholar, endured great poverty while a student.—Boydell, one of the most eminent printsellers in Europe, and at one time Lord Mayor of London, was originally a working-engraver.—Breguet, a celebrated maker of chronometers at Paris, and who has never been surpassed in this line of trade, was originally a poor Swiss boy, who went through some extraordinary difficulties at his outset, but surmounted the whole by perseverance and talent.—Michael Bruce, a Scottish poet of great merit, was the son of a villager at Kinneswood, in Kinross-shire, and contended during his short life with poverty and sickness.—The Scottish poet Burns, as is well known, was born a peasant in Ayrshire, and his early life was spent as a ploughman.—Caslon, an eminent typefounder in London, was originally an engraver of ornaments on gun-barrels; but being noticed by some printers for the elegance of his lettering, he was induced to become a cutter of types, in which he acquired a handsome fortune.—Cavalier, the famous leader and protector of the Camisards, or Protestants of Languedoc, when an attempt was made to exterminate them by Louis XIV. was the son of a peasant, and was bred a journeyman baker: he afterwards distinguished himself in the English service, in which he died, 1740.—Ephraim Chambers, the compiler of a well-known dictionary of arts and sciences, was the apprentice of a mathematical instrument maker; and it was while in this occupation he projected his dictionary, some of the articles of which he wrote behind the counter.—Curran, the eminent Irish barrister, was born of humble parents, and had to struggle with want of practice, and consequent penury, before he became

known, and rose to such splendid forensic fame.—Sir William Davenant, an eminent dramatic writer, and partisan of Charles I. was the son of an innkeeper at Oxford.—James Dickson, the author of some eminent works on botany, and one of the founders of the Linnæan Society in London, was originally a working-gardener, and rose by his own exertions.—Falconer, the author of the *Shipwreck*, was the son of a barber at Edinburgh (by others he is said to have been a native of Fife), and entered the merchant service when young : he underwent many difficulties, and was at last drowned in a voyage to India.—George Fox, the founder of the Society of Friends, or Quakers, was the son of a weaver, and he himself served an apprenticeship to a grazier, and was employed in keeping sheep ; the silence and solitude of which occupation produced a zealous religious feeling, which led to the propagation of his new scheme of human society.—Andrew Fuller, a celebrated Baptist minister, and author of some works of merit, in the last century, wrought as a peasant till he was twenty years of age.—Madame de Genlis, whose maiden name was Ducrest de St Aubin, felt the stings of adversity and poverty in her youth, and depended on her musical abilities for support, till married to the Count de Genlis.—Gray, the poet, was brought up in great poverty, and supported in his education entirely through the extraordinary exertions of his mother.—John Harrison, who received the reward of £20,000 from parliament, for his famous timekeeper to determine the longitude at sea, was the son of a carpenter, and instructed himself in mechanics.

Hawkesworth, the author of the *Adventurer*, was the son of a watchmaker, and was at first brought up to

that profession. He afterwards became a clerk to a stationer, and then rose to distinction as a literary character.—Sir John Hawkwood, a distinguished military commander of the fourteenth century, was originally an apprentice to a tailor, but entering the army as a private soldier, he rose to eminence.—Herder, a German philosopher and writer, and who has been called the Fenelon of his country, was born of poor parents, and nurtured in adversity.—General Hoche, who commanded an expedition against Ireland in the year 1796, began life as a stable-boy.—Joan of Arc, who by her heroism delivered France from the English, was born of poor parents, and supported herself in early life by keeping sheep, and taking care of horses at a country inn.—Samuel Johnson was the son of a bookseller at Lichfield, and attempted to support himself by keeping a school: before he became known, and was patronised by the crown, he had to endure severe pecuniary difficulties.—Henry Jones, a poet and dramatist of last century, was born of poor parents at Drogheda, and was bred a bricklayer.—The famous Paul Jones was the son of a working-gardener, and commenced his maritime life as a sailor-boy.—La Harpe, a French dramatist, poet, critic, and miscellaneous writer, was the son of a Swiss officer, who died in poverty, and left him an orphan, in such destitute circumstances that he was supported by the Sisters of Charity, and it was by their recommendations that he was gratuitously educated.—Lannes, Duke of Montebello, and a marshal under Napoleon, who esteemed him highly for his bravery, was born of poor parents, and was, at his outset in life, a common dyer.—David Levi, a Jew of considerable literary talent, and author of a variety of works, was first a shoemaker, and next a

hatter, but contrived to acquire a respectable portion of learning.—Maitland, the historian of London and Edinburgh, began the world as a travelling dealer in hair.—Benjamin Martin, who flourished as a writer on science at the beginning of the last century, was originally a farmer's labourer, but by dint of perseverance he acquired sufficient learning to become a schoolmaster, and afterwards a lecturer on experimental philosophy.—Molière, the eminent French dramatic writer, was the son of a valet-de-chambre.—Murat, one of the most intrepid of the French marshals, was the son of an innkeeper at Bastide.—Ney, 'the bravest of the brave,' was the son of an artisan.—Samuel Richardson, the author of *Sir Charles Grandison* and other works of fiction, was the son of a joiner, and had a very scanty education: he was bound an apprentice to a printer, and by his genius and perseverance rose in his profession, and became an eminent literary character.—Rousseau, one of the most eminent French writers, was the son of a watchmaker; and being apprenticed to an engraver, he was so ill treated by his master, that he ran away before he was sixteen: his education was totally neglected, and for years he wandered as a vagabond, seeking a precarious subsistence; yet, by his natural abilities, he brought himself into notice and fame.—Ruyter, the famous Dutch admiral, began the world at eleven years of age as a poor sailor-boy.—The illustrious Shakspeare was the son of a dealer in wool; and such was the poverty of the young dramatist, that he was at one time employed as a prompter's call-boy; other accounts represent him as holding gentlemen's horses at the door of the playhouse.—Shield, the famous English violinist and musician, was the son of a singing-master, who left him fatherless; his

early years were spent as an apprentice to a boat-builder, but his genius led him from this occupation to that of music, in which he was eminently successful.—Jeremy Taylor, an eminent theologian and prelate of the seventeenth century, was the son of a barber.—And, to conclude an enumeration that might be indefinitely extended, the late Thomas Brassey, who, by his indomitable perseverance and skilful management, became a leader in the execution of railways and other industrial enterprises—a notable type of the class of contractors in those laborious undertakings which reflect such credit on the enterprise and judicious organisation of Englishmen.

No doubt, from the change of circumstances in the present day, many persons to whom we have referred could not now have been successful in the career they happened to adopt. The discoveries of Arkwright and Stephenson, for example, are not in a special sense to be repeated. A seller of old books could not expect to emulate Lackington. Perhaps it would be difficult to emulate Brassey in the grandeur of his undertakings. We do not, however, present instances of individual effort for precise imitation. Indeed, almost any kind of professional imitation is to be discommended. Nor do we wish that the young should overcome the difficulties that may be incidental to their situation merely for the sake of worldly wealth and distinction, but because it is the duty of every one to cultivate and make the most of his faculties, irrespective of all consequences, leaving the result to Providence. Naturally, there can be no such culture without bringing

emulation in its train, independently of the pleasures derived from well-directed exertion. Happiness is not denied to the humble and trustful; but to this there may be added the happiness of being able to communicate happiness to others. To that let every one aspire in the way congenial with the abilities with which he has been beneficently gifted.

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